AURICPOOL METALAST
Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

PRODUCT VERIFICATION

CE FILE

PRODUCT: **Monoblock filter AR-700 and AR-700C**

REFERENCE: **Various**

DATE: **September 2009**[i]

MANUFACTURER: **METALAST S.A.U.**
Passeig Sanllehy 25
08213 POLINYA
BARCELONA
SPAIN

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

CONTENT INDEX

1.- General data 4
1.1.- Manufacturer 4
1.2.- Product identification 4
1.3.- Product description 4
1.4.- Product function 5
1.5.- Product active elements 5
1.6.- Accessories 5
2.- Technical specifications and solution description 6
2.1.- Product function limits 6
2.2.- Risk identification 6
2.3.- Risk analysis 6
2.4.- Risk reduction actions done 6
2.5.- Protection against risks 7
2.6.- Information and warnings 7
2.7.- Information and warnings labels 7
2.8.- Additional protective actions 7
2.9.- Harmonized standards to be applied 7
2.10.- Product analysis according to low tension directive 8
2.11.- Product analysis according to EMC directive 8
3.- Instruction manuals 8
3.1.- User instruction manual 8
3.2.- Maintenance instruction manual 8
3.3.- Product parts list 9
3.4.- Spare parts' list 9
4.- EC-Conformity declaration 9
5.- Annex 9
5.1.- Parts' declarations (RoHS, EC, …) 9
5.2.- Parts' drawings 9
5.3.- Electrical installation scheme 9
5.4.- Other tests. Calculations 9

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

5.5.- Quality system to assure the production conformity 10
5.6.- Photographs and other documents 12
5.7.- Contact support phone numbers for customers.....13
6.- Changes to the previous versions of the files 13
6.1- Version 1 (September 2009) 13

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

1.- General data

1.1.- Manufacturer

MANUFACTURER DATA	
NAME	METALAST, S.A.U.
IDENTIFICATION NUMBER	A08246274
ADDRESS	Passeig Sanllehy, 25 E-08213 Polinyà
PHONE NUMBER:	+34 93 713 18 55

1.2.- Product identification

PRODUCT CHARACTERISTICS	
BRAND:	GRE
MODEL:	AR-700 and AR 700-C
REFERENCE:	
PRODUCTION START DATE:	

The identification labels for each model are attached to the present document
As the AR700 and AR700-C models have the same filtration unit, the label used is the same, even if the product flow rate and filtration speed is different, due to the hydraulic loses caused by all the accessories provided with the –C version.

1.3.- Product description

The product is an assembly of a sand filter and an electrical self-priming pump. The assembly has a sand filter, a pump and a selecting valve.

It could also include some accessories such as the connecting hoses. They are detailed in the product parts list. (Section 3.3)

The product rated power and the filtration flow rate are detailed below. All the devices have been designed to be used in a 230V, 50 Hz electrical network.

It is designed as a Class I household electrical device. The pump has an insulation degree class F and a service class S1. The device is provided with the cable and the plug,

ready to be connected to the electrical network. The cable has been designed to be a class Y according to the EN 60335-1 standard, so it cannot be changed or repaired by the end user.

PRODUCT DESCRIPTION					
MODEL	RATED POWER	FILTER DIAMETER	FILTER FLOW RATE	FILTRATION CAPACITY	SAND WEIGHT
AR0700 / AR700C	260 W	300 mm	3,5 m^3/h	50 $m^3/m^2.h$	25 Kg
			4 m^3/h	56.61 $m^3/m^2.h$	

The silica sand to be used should have an approximate grain size of 0.4 to 0.8 mm. With the recommended sand weight, the filter has to be filled at about 2/3 of its height.

The AR700C model has the same filter and pumping system than the AR700, but includes some accessories such as the skimmer.

1.4.- Product function

The product has been designed to filter the water of a swimming pool by passing it through silica sand. It can also be used for pool bottom vacuum cleaners, according to the instruction manual.

Another use described in the instruction manual is to drain the pool at the end of the season.

The filter cannot be used for more than 4 hours without stopping for, at least, 2 hours.

1.5.- Product active elements

The active electrical elements of the device are only the electrical motor of the pump. However, the whole assembly should be taken into account when the EN60335-2-41 standard is applied.

1.6.- Accessories

The parts and accessories provided with the product are described in the parts list section (section 3.3)

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

2.- Technical specifications and solution description

2.1.- Product function limits

The product has been designed to filter the water in a swimming pool. The water to be treated must be clean, with the usual levels of treating products such as bromine, chlorine, ozone or other commonly used in the pool treatment. It has not been designed to treat sea water. It is not suitable to be used as a filter for drinkable water or irrigation water.

It is advised in the instruction manual that the device must not be on while the pool is being used.

The device is to be used with water in a temperature below 35ºC.

2.2.- Risk identification

During the operation of the device, it can be dangerous for the persons or goods which are nearby the device or the pool installation.

The risks have been analyzed according to the EN 60335-2-41 standard.

Attached to the present document are the product certificate against the low-voltage directive, the testing report for the winding temperature and the protection degree test evidence for the whole assembly.

2.3.- Risk analysis

The risks have been analyzed according to the EN 60335-2-41 standard.

There are some different kinds of risks, such as:

- Electrical risks
- Risks to the device
- Risks to other objects

2.4.- Risk reduction actions done

The actions to reduce the risk have been of different kinds:

Design: The device has been designed and tested according to the EN 60335-2-41, the 89/392/EC (Directive of machines) and other standards.

- Instruction manual: General information to the user for the installation and the use. The instruction manual is attached to the present document

- Labels: Some specific information and warnings are detailed in some labels which are placed over the product. All the labels placed on the product are detailed in the section 2.7 of the present document.

2.5.- Protection against risks

The user must follow all the instructions and take care of all the warnings contained in the instruction manual, warning labels and other informations that the manufacturer could include over the product or in the package.

The user cannot perform any maintenance or reparation to the device. Any action involving opening the covers or dismantling parts which are not specifically advised in the instruction manual must be done by a technical service. This warning is included in the instructions manual.

It is also specially advised in the instruction manual that the device cannot be touched with wet hands or any wet part of the body.

2.6.- Information and warnings

All the information to reduce the risks to the persons or goods are included in the instruction manual and/or in the labels on the device.

Any action which is not described in the instruction manual as to be performed by the final user must be done by an authorized technical service.

2.7.- Information and warnings labels

The labels placed over the product are attached to the present document.

2.8.- Additional protective actions

During the assembly or the use of the device there's no need of special clothing or protecting devices, apart of the actions described in the instruction manual.

2.9.- Harmonized standards to be applied

The harmonized standards involved in the device are:

- Directive 89/392/EC (General requirements for machine design)
- Directive 2006/95/CE (Low voltage devices)
- Directive 2004/108/CE (EMC)

- EN 61000-6-1 and -3 (Electro magnetic compatibility)
- EN 60335-1 (Electrical household equipment), with its amendments and erratum
- EN 60335-2-41 (Particular requirements for pumps) and amendments

Other standards may apply depending on local regulations.

2.10.- Product analysis according to low tension directive

The electrical active parts of the device have been tested according to the EN 60335-2-41 standard. The certificate is attached as an annex.

No other electrical active part is used in the device.

2.11.- Product analysis according to EMC directive

There's only one active electrical part on the device, which is the electrical motor.

According to the results found in the test performed in APPLUS certification technological center on 18th October 2007 to a similar motor, it has been assumed that, as the device is assembling a similar asynchronous motor not having any electronic device, no disturbance will be generated over the limits specified in the EN61000-3-2 standard

In the similar manner, it can be assumed that the device is not affected by electromagnetic disturbances according to the EN 61000-3-3 standard.

The testing certificate is attached in the present document.

Apart of this, in order to check the emission of harmonics, an analysis has been done. It is also attached to the present document.

3.- Instruction manuals

3.1.- User instruction manual

The instruction manual is attached as an Annex to the present document. The instruction manual also includes the instructions for the function and the installation for other similar models.

3.2.- Maintenance instruction manual

No specific maintenance manual is included in the device. The maintenance has to be done by a technical service.

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

3.3.- Product parts list

The product parts list is listed in the instruction manual

3.4.- Spare parts' list

The spare parts list is listed in the instruction manual

4.- EC-Conformity declaration

The EC-Conformity declaration is included in the instructions manual

5.- Annex

5.1.- Parts' declarations (RoHS, EC, …)

The evidence that the only electrical active part of the device has been tested according to the EN 60335-2-41 is attached to the present document.
However, as the cover against water and external access to live parts is different than the tested in the certificate, it is also included the evidence that the whole device has been also tested against EN 20324 (Access to electrical live parts)

5.2.- Parts' drawings

The parts drawings are attached to the present document

5.3.- Electrical installation scheme

No electrical installation scheme is included, as the device must be easily connected to the electrical network. The protections to be included to the specific network are detailed in the instruction manual.

5.4.- Other tests. Calculations

As the tests performed over the motor could be affected by the external enclosure of the filter, specially on the external protection degree and the heating, specially on the internal windings. According to the EN 60335-2-41 standard, section 6.2, the protection degree for a non-mobile pump situated in a swimming pool and over 3,5 m from the water must be, at least, X4. The temperature increase has to be according to EN 60335-1, section 11 table 3.

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

In this way, in order to ensure that the device as an assembly overpasses these specifications, specific tests have been performed. The results of these tests are attached to the present document.

Related to the installation of the product at more than 3,5 m of the wall of the pool, 4,5 m in leght hoses are supplied to such purpose.

5.5.- Quality system to assure the production conformity

The product manufacturing control procedures will be the same as used in the company, according to the implemented ISO 9001:2004 quality assurance system.

In case of any complain from the final vendor, it will be treated according to the normal procedure.

Company's certificate shown bellow

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Iberia

CERTIFICATE

The Certification Body
of TÜV SÜD Iberia, S. L.

certifies that

Metalast S.A.U.
Paseo Sanllehy, 25
E - 8213 Polinyá
and
C/ Andorra, parcela 49, 11ª
Pol. Ind. Pla de Llerona
E- 08520 Les Franqueses del Vallés (Barcelona)

has established and applies
a Quality Management System for

Design, manufacture and commercialization of equipment and components for swimming pool and aquatic facilities of leisure; (accessory in stainless steel, pumps and filters)

An audit was performed, Report No. **520**

Proof has been furnished that the requirements
according to

ISO 9001: 2000

are fulfilled. The certificate is valid until **04-02-2010**

Certificate Registration No. **07 100 22725 TMS**

TÜV SÜD

Barcelona, 05-02-2007

ENAC
CERTIFICACIÓN
Nº 27/SC038
Nº 27/C-SG014
Nº 16/C-MA021

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

5.6.- Photographs and other documents

Picture 1: General view of the device

5.7.- Contact support phone numbers for customers

In the EU countries where this product is sold, a network of contact phone numbers is in operation to support end-users questions and claims as shown bellow.

These numbers are included in the instruction manual.

UK	:	0800 91 76 778
FR	:	0892 707 720
DE	:	0180 333 0123
IT	:	800 78 1592
NL	:	0800 022 33 04
BE	:	0800 10 211
ES/PT	:	+34 946 741 708
AUS	:	+49 180 333 0123
SW	:	0 800/563 820

6.- Changes to the previous versions of the files

6.1- Version 1 (September 2009)

The versions have been added to all the documentation, in order to have an easier control of the changes.

The photograph of the device has been updated to the new one including the new 5-way valve.

The instruction manual has been updated to the 5-way valbe one for the AR700 device.

In the same version, the EC-mark report issued by Intertek Italy has been added, as well as the CB-scheme report issued for the whole pump.

AURICPOOL METALAST

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

PRODUCT VERIFICATION

CE FILE

ANNEX: INSTRUCTION MANUALS

PRODUCT: **Monoblock filter AR-700**

REFERENCE: **Various**

DATE: **September 2009**

MANUFACTURER: **METALAST S.A.U.**
Passeig Sanllehy 25
08213 POLINYA
BARCELONA
SPAIN

This document contains the instruction manuals provided with the product. The document contains 77 pages

AR700 – AR7050 – AR710 – AR715

EN **SKID PACK**

Installation and maintenance manual

ES **MONOBLOC**

Manual de instalación y mantenimiento

FR **FILTRO MONOBLOC**

Manuel d'installation et d'entretien

DE **MONOBLOCK-FILTER**

Einbau-und betriebsanleitung

IT **FILTRO MONOBLOCCO**

Manuale di installazione e manutenzione

NL **MONOBLOC-FILTER**

gebruiksaanwijzingen monobloc filter

PT **FILTRO MONOBLOCO**

Manual de instruções e manutenção

We reserve to change all of part of the articles or contents of this document, without prior notice.
Nos reservamos el derecho de cambiar total o parcialmente las características de nuestros artículos o contenido de este documento sin previo aviso.
Nous nous réservons le droit de modifier totalement oru en partie les caracteristiques de nos articles ou le contenu de ce document san pré avis.
Wir behalten uns das recht vor die eigenschaften unserer produkte oder den inhalt diese prospektes teilweise oder wollstanding, ohne vorherige benachichtigung su andern.
Ci riservamo il diritto di cambiare totalemente o parzialmente le caratteristiche tecniche dei nostri prodotti ed il contenuto di questo documento senza nessum preavviso.
Wij behouden ons het recht voor geheel of gedeeltelijk de kenmerken van onze artikelen of de inhouk van deze handleiding zonder voorafgaand bericht te wijzigen.
Reservamo-nos no dereito de alterar, total ou parcialmente as caracteristicas os nossos artigos ou o conteúdo deste documento sem aviso prévio.

AR705R0001-04

Read this manual thoroughly before installing the filter and follow the instructions carefully during installation and use.
Keep this manual for future reference regarding the operation of this equipment.

- All electrical installations should comply with the following standard:

European Low Voltage Directive 2006/95/CE,
EN 60335-2-41, safety of household or similar electrical appliances, particular requirements for pumps.

As such with all rules pertaining to "*to the construction of electrical installations within specific confines: swimming pools and fountains*", or the equivalent standard in force in each region or country.

- The electrical installation should be done by someone qualified in working with electrical equipment. This equipment is not designed for those with physical, sensory or mental handicap or people lacking in experience, unless done under supervision or with instructions of use from a person in charge of safety.
- The height of the sand should not exceed 2/3 of the height of the tank.
- The equipment must not be switched on while the pool is being used.
- Do not operate the equipment unless it is properly primed.
- NEVER touch the filter when it is operating if you are wet or have wet hands.
- When handling the filter or valve, DISCONNECT the power supply.
- Make sure that the ground is dry before touching the electrical equipment.
- Do not submerge the equipment or put it in a place where it could be submerged.
- Do not permit children nor adults to sit or lean on the equipment. Children should be supervised to ensure that they do not play with the equipment.
- If the supply flex of the equipment is damaged, it should be replaced by the manufacturer or its service centre. If in doubt, contact the manufacturer's service centre.
- The equipment should be connected to a voltage of 230 V alternating current and 50 Hz power point, with earth connection, protected by a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.
- It is essential that you use a multiple disconnection device with a space of at least 3 mm between surfaces to disconnect the filter from the electrical current.

1 PACKING COMPONENTS

The equipment which you have just purchased is a special apparatus conceived and designed especially for above ground swimming pools. As a result of its innovative design and high level of functionality, it provides you with the different components required to filter water: filter, pump and selector valve in a single unit. The main components of this filter are as follows:

Model	***Fig.***	***Pos.***	***Name***
AR700 / AR700C	1	1	Five-way valve eccentric manifold
AR700 / AR700C	1	2	Filter body Ø300

AR700 / AR700C	1	3	Monobloc base Ø300
AR700 / AR700C	1	4	Hose connection of Ø38 x 460
AR700 / AR700C	1	5	Motor cover
AR7050 / AR7050C	1	10	Six-way valve eccentric manifold
AR7050 / AR7050C	1	1	Four-way valve eccentric manifold
AR7050 / AR7050C	1	2	Filter body Ø300
AR7050 / AR7050C	1	3	Monobloc base Ø300
AR7050 / AR7050C	1	4	Hose connection of Ø38 x 360
AR7050 / AR7050C	1	6	Pump
AR7050 / AR7050C	13	1	Clamp
AR7050 / AR7050C	13	2	Nut Ø 2 1/4"
AR7050 / AR7050C	13	3	Pin connection Ø38
AR7050 / AR7050C	13	4	O-ring seal
AR710 / AR710C	1	7	Monobloc base Ø380
AR710 / AR710C	1	8	Filter body Ø380
AR710 / AR710C	1	10	Six-way valve eccentric manifold
AR710 / AR710C	1	12	Hose connection of Ø38 x 580
AR710 / AR710C	1	13	Pump
AR710 / AR710C	13	1	Clamp
AR710 / AR710C	13	2	Nut Ø 2 1/4"
AR710 / AR710C	13	3	Pin connection Ø38
AR710 / AR710C	13	4	O-ring seal
AR715 / AR715C	1	7	Monobloc base Ø380
AR715 / AR715C	1	9	Filter body Ø430
AR715 / AR715C	1	11	Six-way valve eccentric manifold
AR715 / AR715C	1	12	Hose connection of Ø38 x 580
AR715 / AR715C	1	14	Pump
AR715 / AR715C	14	1	Clamp
AR715 / AR715C	14	2	Nut Ø 2 1/4"
AR715 / AR715C	14	3	Pin connection Ø38
AR715 / AR715C	14	4	O-ring seal

Pressure gauge, connection hoses for the pool, skimmer and silica sand are NOT SUPPLIED wth models AR700 / AR7050 / AR710 / AR715.

REQUIREMENTS FOR CORRECT INSTALLATION

This filter is easy to install and can be assembled by one adult in about 2 hours, taking care to follow the instructions detailed in this manual correctly.

Only the following tools are required to correctly handle the filter components and to install it:

Task	Tool	Alternative tool
Tighten the hose flanges	7 mm Stecker screwdriver	Philips screwdriver
Cut the liner	Cutter	Knife
Protection of collector pipe	Piece of plastic	Piece of fabric

2 BEFORE CONNECTING THE FILTER

Location

Place the filter on a flat, solid surface at a minimum distance of 3.5 meters from the pool (in accordance with standard installation regulations of electric equipment in swimming pools in force in each region or country) and at the same level as the bottom of the pool to prevent air from entering the cleansing circuit and to ensure that the filter remains primed (fig. 2). The filter should be protected from sun and rain, and kept in a sufficiently ventilated area during operation. Never cover it during operation.

In models where pool connection hoses are supplied, these will be 4.5 metres in length. In all cases, check that this length is sufficient in order to install the apparatus on a flat, solid surface more than 3.5 metres away from the pool. If the hose length is insufficient, contact your service centre.
When hoses are not supplied with the apparatus, hoses with a minimum length of 4.5 metres should be used which allow the filtering equipment to be placed on a flat, solid surface more than 3.5 metres away from the pool. This hose set is available as an optional kit from your vendor.

During the installation process, if in doubt, contact the vendor of the equipment or an authorized service centre.

Assembly
Once the filter is set in place, proceed as follows:
- Follow the instructions on the sheets supplied with the equipment in which the first steps of assembly of the equipment are shown.
- Place the inner collector correctly on the bottom of the filter (fig. 6).
- Cover the mouth of the collector situated on the inside of the filter with a plastic protector to make sure sand does not enter (fig. 5).
- Put the sand inside the filter:
    - 25 kg for model numbers AR700 and AR 7050.
    - 40 kg for model number AR710.
    - 70 kg for model number AR715.

The silica sand lasts for an unlimited period of time. It should only be replaced if lost. Record the reference of the level of silica sand for future replacement (fig. 5).
- Remove the remains of sand from the filter opening and take off the protective plastic.
- Replace the TOP selector valve with its coupling and secure with the metal band or seal.
- Firmly tighten the screw on the metal band which joins the valve to the filter (fig. 4).
- Connect the suction and discharge hoses to the suction and discharge terminals on the valve, tightening them firmly with the clamps (fig. 9 and fig. 12).

NOTE: Check that the hoses allow the filtering equipment to be located and fixed on a flat, solid surface that is more than 3.5 metres from the pool (see section 2.1).

- Connect the other end of the suction hose to the skimmer tightening firmly with a clamp. Repeat the same procedure with the return nozzle terminal and connect the discharge hose.
- Following installation, the first cycle of filter backwash should be performed. In order to do so, follow the instructions in section 5.3.

3 ELECTRICAL CONNECTION

All electrical installations should comply with the following standard:

European Low Voltage Directive 2006/95/CE,
EN 60335-2-41, safety of household or similar electrical appliances, particular requirements for pumps.

As such with all rules pertaining to "*to the construction of electrical installations within specific confines: swimming pools and fountains*", or the equivalent standard in force in each region or country.

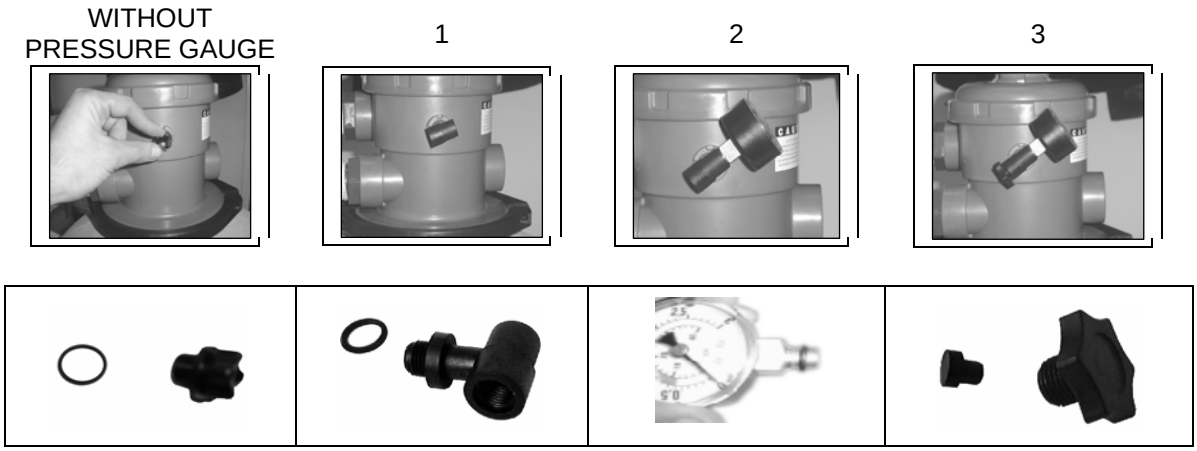
The equipment should be connected to a voltage of 230 V alternating current and 50 Hz power point, with earth connection, protected by a residual current device (RCD) having a rated residual operating current not exceeding 30 mA. (Not supplied; available for purchase in electrical shops.)
It is essential that you use a multiple disconnection device with a space of at least 3 mm between surfaces to ensure there is no current when the equipment is not being used. (Not supplied; available for purchase in electrical shops.)

4 TOP SELECTOR VALVE
For model AR700 the top selector valve on the filter is used to select the 5 different filter functions: filter, backwash,rinse, waste and closed.
For models AR710 and AR715, the top selector valve on the filter is used to select the 6 different filter functions: filter, backwash, recirculate, rinse, waste and closed.

<u>To change the settings on the valve, proceed as follows for the mod els AR700 ,AR710, AR715 and AR7050:</u> fig. 7

- Disconnect the equipment from the mains.
- Loosen the upper triangular knob on the valve by turning it until you can lift the cover of the housing and turn it.
- Turn the cover until the desired setting is aligned with the discharge hose, where the anchorage is, and the rib is inserted in its housing.
- Re-tighten the knob by turning it, but be careful not to over-tighten so as not to damage the internal components of the valve.

Assembling the pressure gauge in models AR700, AR7050, AR710 and AR715



5 OPERATION

The operation of this filter is based on the filtration capacity of the silica sand which is inside. The water in the pool is driven by the filter pump and forced to pass through the silica sand. The sand acts as a filtering element which retains the impurities in the water. The environment, trees, pollen, insects and frequency of bathing, amongst other factors, determine the dirtiness of the water in the pool. Depending on these factors, the silica sand in the filter should be cleaned with greater or less frequency (see section 5.3).
To keep the pool water in good condition, use the chemical products recommended by the manufacturer (chlorine, alga protection, flocculants, etc.).

CHEMICAL PRODUCTS SHOULD NEVER BE PLACED IN THE BASKET OR THROUGH THE FILTER, AS THIS WOULD DETERIORATE THE MATERIALS OF THE UNIT AND LIMIT ITS EFFICACY

5.1 Primng the filter

The filter must be correctly primed at all times. If the filter is not primed it means that an air chamber has been created inside which causes defective circulation of water. This prevents proper filtration of the water by the silica sand and is detrimental to the motor.
The filter may become unprimed for several reasons:
- Starting up a new unit.
- Starting up a unit after an extended period of inactivity.
- Following use of a suction bottom cleaner.
- Air absorbed by the skimmer due to the low level of water in the pool.
- Due to incorrect use of the unit, suction cover or skimmer plug.

When is the filter unprimed?
We can see that the filter is unprimed when:

• The water entering the filter sounds like it is falling freely. This indicates that an air chamber has been created between the water inlet and the silica sand.
• An excess of air bubbles is released through the return nozzle.
• The bottom cleaner (not supplied) does not operate with suction, and the silica sand remains clean after cleaning.

How can we prime the filter?
• Verify that the suction hose is connected to the skimmer and the passage is clear (the plug is not in place).
• Disconnect the filter from the mains.
• With the valve on the filter position, slightly loosen the drain nut which is beside the pressure gauge, so as the air accumulated inside the filter can leave. If there is no pressure gauge, put the valve in the WASTE position until water is released through the waste outlet without bubbles.
• When you see that only water is released (for 1 to 2 minutes), re-tighten the nut.
• Connect the filter to the mains and check that the sound of falling water is no longer heard. Otherwise, repeat the operation.

5.2 Filtration

NEVER HANDLE THE VALVE WHILE THE MOTOR IS RUNNING

Carry out a wash of the sand before the first filtration (part 5.3).
The valve should be in the filter position (FILTER). The service life of the filter will be longer if the periods of continuous operation do not exceed 4 hours. The need for daily filtration is determined by the volume of water in your pool in m^3 in relation to the m^3/h filter flow rate for a water temperature of approximately 21ºC and placed 3.5 m from the pool. Leave the motor at a standstill for at least 2 h between each 4 h period of operation.

$$\frac{\text{Pool volume in } m^3}{\text{Filter flow rate in } m^3/h} = \text{Hours required}$$

Example:

$$\frac{42\ m^3}{5.5\ m^3/h} = 7.63 \text{ hours}$$ 2 cycles of 4 hours with a break of 2 hours

In the initial filtration treatment it is important to leave the filter at a standstill for the periods indicated. It is recommended that you increase the amount of time in ratio to any temperature rise in the pool.

5.3 Filter backwash
The backwash process cleans the silica sand from inside the filter. This is achieved by reversing the direction of water circulation with the top selector valve. This process should be done regularly. For this purpose you should observe several factors which indicate the dirtiness of the sand:
- A decrease in the return flow rate is detected, after checking that the pump is well primed.
- Pressure gauge (pos. 1 on the monobloc diagram) indicates that there is excess pressure (needle pointing between yellow and red, or on red).

To clean the filter of models AR700, AR7050, AR710 and AR715, proceed as follows:
- Disconnect the filter from the mains. Never move the selector valve while the motor is running.
- Firmly press the upper selector valve, displacing the front rib, until you can turn it (fig. 7).
- Turn the control gently until the front rib is in line with the backwash operation (fig. 7).
- Connect the Ø38 mm x 1.5 m.(In the model AR715 hose with the hose sleeve of 1 ½")to the valve waste outlet from the valve and direct the other end of the hose to a drain or sewer.
- Run the filter for approximately 2 minutes (until impurities no longer run out with the water).in the model AR715 this can be seen through the transparent window on the side.
- Stop the equipment.
- Put the valve in the rinse position and connect the filter for a few seconds (fig. 7).
- Stop the equipment, put it in the desired filter position (fig. 7) and remove the hose from the waste position, if you desire.(Fig.12)

5.4 Draining the pool
The filter allows you to drain nearly the entire pool after the bathing season has ended. In order to do so, you should set the top selector valve on the waste setting (fig. 7) without plugging in the filter and connect the ø 38

mm x 1.5 m hose to the valve waste outlet and direct the other end to the drain or sewer depending on the skimmer model, and proceed as follows:

For models with wall skimmer for Dream Pool (position 1, fig. 3) and Jet Pool swimming pools (position 2, fig. 3):

- Remove the inner basket from the skimmer and cover the suction inlet with the plug supplied for this purpose.
- Disconnect the suction hose from the skimmer inlet. Loosen the clamp which secures the hose, supporting it so that no water leaks and submerge it immediately in the pool so that the filter remains primed.
- Weigh down the end of the suction hose with a heavy object which will not damage the liner so that it is forced to sink to the bottom of the pool.
- Start up the pump and drain the pool. Remember that the filter will not fully drain the pool. When a few centimetres of water are left and the pump no longer sucks in water, turn it off.
- Once the equipment is draining the pool, do not interrupt the process until it is finished so that it remains primed.
- If you are going to refill the pool with water, first manually remove the remaining water without damaging the liner.
- If you are going to disassemble the pool, you can fold the liner with the remaining water in the centre.
- Remove the plate in the DREAM POOL model or the tubes in the JET POOL model.
- Unfold the liner to empty it completely.
- This operation should only be done when you are disassembling the pool.

Models with self-supporting skimmer for Magic Pool swimming pools (position 3, fig. 3)

- Aside from the drain included within the pool, you can use the equipment to empty it:
- Raise the self-supporting skimmer until it is hanging outside the pool, to prevent water from entering the skimmer.
- Disconnect the suction hose from the skimmer inlet by the outer part of the pool wall. Loosen the clamp which secures the hose carefully so that the liner is not damaged. Hold the hose so that it does not leak, and submerge it immediately in the pool so that it remains primed.
- • Weigh down the end of this hose with a heavy object which will not damage the liner so that it is forced to sink to the bottom of the pool.
- • Start up the pump and drain the pool. Remember that the filter will not fully drain the pool. When a few centimetres of water are left and the pump no longer sucks in water, turn it off.
- •Once the equipment is draining the pool, do not interrupt the process until it is finished so that it remains primed.
- • If you are going to refill the pool with water, first remove the remaining water through the drain without damaging the pool.

THE HOSE SHOULD NOT CONTINUE TO APPLY SUCTION TO THE BOTTOM OF THE POOL LINER. THE PUMP MAY BE SERIOUSLY DAMAGED IF IT OPERATES WITHOUT WATER CIRCULATION OR MAY DAMAGE THE LINER.

5.5 Cleaning the bottom of the pool

In order to clean the bottom of the pool, use the pump filter with one of the following accessories:
“Riñón” bottom cleaner, “Oval” bottom cleaner (you will also need a Ø38 mm hose and the pole). To purchase these items, consult your vendor or ask the After-Sales Service provided by the pool manufacturer. Always use original replacement parts.
A hose which extends beyond the length required to reach all points of the pool is more difficult to use. Cut off the section of the hose which is not needed. Check that the rubber terminals conserve their seal.

5.6 Priming the bottom cleaner hose:

Insert the bottom cleaner into the pool vertically, with the pole and the hose connected. Let it fill with water and keep the rest of the hose outside of the water. Continue to insert the hose in the water slowly by 50 cm sections which should be submerged at the same time as they are completely filled with water. Proceed up until the end, when the entire hose is filled with water and submerged. If the hose is not fully primed, the bottom cleaner will not perform suction and the cleansing unit may be damaged if it is forced to operate when it is empty.

Rinsing models AR710 and AR715

Having completed a “WASH” cycle of the filter and having put the installation on “FILTER”, for a few seconds the water will be cloudy flowing into the pool. To avoid having this cloudy water running into the pool, you can use the “RINSE” setting.
This works as follows: immediately after the “WASH”, stop the pump, turn the valve to “RINSE” (fig. 7) and connect the pump again for one minute, then stop the pump and turn the valve to “FILTER”.

5.7 Recirculation with models AR710 and AR715

With the valve in this position, the water goes directly from the pump to the pool, without passing through the filter (fig. 7).

5.8 Closed setting

The “CLOSED” setting for the selector valve is used to prevent water from circulating through the hoses and the filter (fig. 7).

6 CABLE REPLACEMENT

If the power cable is damaged, it should only be replaced by the manufacturer or service centre.

7 MAINTENANCE

After the bathing season has ended, the filter should be kept in a dry place where it is protected from bad weather. For this reason, after performing a final backwash to clean the silica sand, dismantle the hoses and drain the water in the filter through the tank drain plug until it is completely empty.
After removing all of the water from the filter, carefully clean the remains of silica sand from the thread before replacing the plug. Failure to do so could damage the thread.
The filter tank drain plug should only be used in this operation.
VERY IMPORTANT: following an extended period of inactivity, before starting up the filter check that the filter is correctly primed.

7.1 CARE OF THE PUMP

The filter pump is designed to operate without any specific maintenance. Some consumable elements or those that are exposed to wear and tear may have a shorter life-span than the guarantee period.

For any form of maintenance, contact the manufacturer or its service centre.

Trouble-shooting and technical assistance

This filter and its instructions are especially designed for home use. There is no need for professional assistance, except in special cases. The following are some of the problems and causes which may arise over time during the life-span of the filter, and which you may be able to fix on your own. If not, contact the pool manufacturer on the telephone number and at the time indicated in the instructions.

MODEL NUMBERS AR700,AR7050.AR710

PROBLEM	CAUSE	SOLUTION
The filter leaks through the hose terminals.	Poor connection between the terminals and the hoses.	Put Teflon in the housing, insert the hose terminals up until the bottom of the housing and tighten the clamps.
After the filter has started up, there is no flow in the return nozzle.	The valve is not in the '"filter" setting.	Disconnect the filter and put the valve in the correct setting
	The filter is above the level of the water and is unprimed.	Place the filter in the correct position and prime it.
	The suction cover or the skimmer plug has been inserted.	Remove the suction cover or the skimmer plug.
Intermittent operation.	Low water level on skimmer.	Fill the pool and prime the filter.
	The filter is not primed.	Prime the filter.
The flow rate of the filter is low.	Due to use, the filter is dirty.	Perform a backwash.
	The filter is not primed.	Prime the filter.
Water comes out through the mouth of the filter.	The connection between the valve and the filter is dirty.	Clean the sand from the opening. Insert the coupling on the valve properly and tighten the metal band firmly.
	The metal band is loose.	
The filter valve leaks through the drain terminal (WASTE).	Damage of inner coupling due to incorrect use of chemical products.	Change the top valve cover.
		Do not put chemical products in the preliminary filtration skimmer basket.

PROBLEM	CAUSE	SOLUTION
	Valve head broken due to incorrect use (over-tightening).	Change the valve head; do not over-tighten.
The motor does not start up. It makes no noise or vibration.	There is no current in the electrical line.	Make sure that there is current running in the electrical line.

MODEL NUMBERS AR715

PROBLEM	CAUSE	SOLUTION
The filter leaks through the hose terminals.	Poor connection between the terminals and the hoses.	Put Teflon in the housings which have threads, insert the hose terminals up until the bottom of the housing and tighten the clamps.
After the filter has started up, there is no flow in the return nozzle.	The valve is not in the “filter” setting.	Disconnect the filter and put the valve in the correct setting.
	The filter is above the level of the water and is unprimed.	Place the filter in the correct position and prime it.
	The suction cover or the skimmer plug has been inserted.	Remove the suction cover or the skimmer plug.
Intermittent operation.	Low water level on skimmer.	Fill the pool and prime the filter.
	The filter is not primed.	Prime the filter.
The flow rate of the filter is low.	Due to use, the filter is dirty.	Perform a backwash.
	The filter is not primed.	Prime the filter.
Water comes out through the mouth of the filter.	The connection between the valve and the filter is dirty.	Clean the sand from the opening. Insert the coupling on the valve properly and tighten the metal band firmly.
	The metal band is loose.	
The filter valve leaks through the drain terminal (WASTE).	Damage of inner coupling due to incorrect use of chemical products.	Change the top valve cover.
		Do not put chemical products in the preliminary filtration skimmer basket.
	Valve head broken due to incorrect use (over-tightening).	Change the valve head; do not over-tighten.
The motor does not start up. It makes no noise or vibration.	There is no current in the electrical line.	Make sure that there is current running in the electrical line.
The motor does not start but a buzzing sound can be heard.	Problem with the motor.	Contact the After-Sales Service provided by the pool manufacturer.
Water leakage.	Analyze the reason for water loss.	Check the hose clamps.
		If the leak is between the pump and the motor, contact the After-Sales Service provided by the pool manufacturer.

Lea atentamente este manual antes de instalar el filtro y siga meticulosamente las indicaciones durante la instalacion del mismo y durante su uso.

Conserve este manual para futuras consultas acerca del funcionamiento de este aparato.

- En todo lo referente a la instalación eléctrica debe seguirse la normativa

Directiva Europea 2006/95/CE de aparatos de baja tensión,
EN 60335-2-41, seguridad en aparatos electrodomésticos y análogos, requisitos particulares para bombas

Así cómo toda la normativa aplicable que haga referéncia "*a la construcción de instalaciones eléctricas en confines especiales. Piscinas y fuentes"*, o análogas, vigente en cada zona o pais.

- La instalación eléctrica debe ser hecha por personal profesional cualificado en instalaciones eléctricas. Éste equipo no esta destinado a personas con capacidades físicas, sensoriales o mentales reducidas o sin experiencia, a no ser que hayan tenido supervisión o instrucciones acerca de su uso por un responsable de seguridad.
- La altura de la arena no debe sobrepasar los 2/3 de la altura del depósito.
- No tenga el aparato en marcha mientras utiliza la piscina.
- No haga funcionar el equipo sin estar correctamente cebado.
- No toque NUNCA el equipo en marcha con el cuerpo húmedo o las manos húmedas.
- Siempre que deba manipular el equipo o la válvula, DESCONÉCTELO de la tóma de corriente.
- Asegúrese de que el suelo está seco antes de tocar el equipo eléctrico.
- No coloque el equipo sumergido o donde pueda quedar sumergido.
- No permita ni a niños ni a adultos apoyarse o sentarse sobre el equipo. Los niños deben ser supervisados para asegurar que no juegan con el equipo.
- Si el cable flexible de alimentación de este aparato está dañado, debe ser sustituido sólo por el fabricante o sus servícios técnicos. Ante la duda consulte con un servicio técnico.
- El equipo se debe conectar a una toma de tensión de 230 V de corriente alterna y 50 Hz, con conexión a tierra, protegida con un interruptor diferencial (RCD) con una corriente de funcionamiento residual asignada que no exceda de 30 mA.
- Es imprescindible utilizar un dispositivo de desconexión múltiple con una separación mínima de 3 mm entre contactos para desconectar el fltro de la alimentación eléctrica.

1 COMPONENTES EMBALAJE

El equipo que acaba usted de comprar es un aparato especialmente concebido y diseñado para piscinas elevadas. Con un innovador diseño y una gran funcionalidad, dispone usted de los diferentes elementos necesarios para filtrar el agua: Filtro, bomba y válvula selectora en un mismo aparato. Los principales componentes de este equipo son:

Modelo	***Fig.***	***Pos.***	***Denominacion***
AR700 / AR700C	1	1	Valvula de 5 vias colector excentrico
AR700 / AR700C	1	2	Cuerpo filtro Ø300
AR700 / AR700C	1	3	Base monobloc Ø300
AR700 / AR700C	1	4	Manguera de conexión de Ø38 x 460
AR700 / AR700C	1	5	Cubierta motor
AR7050 / AR7050C	1	10	Valvula de 6 vias colector excentrico
AR7050 / AR7050C	1	2	Cuerpo filtro Ø300

AR7050 / AR7050C	1	3	Base monobloc Ø300
AR7050 / AR7050C	1	4	Manguera de conexión de Ø38 x 360
AR7050 / AR7050C	1	6	Bomba
AR7050 / AR7050C	13	1	Abrazadera
AR7050 / AR7050C	13	2	Tuerca Ø 2 1/4"
AR7050 / AR7050C	13	3	Conexión espiga Ø38
AR7050 / AR7050C	13	4	Junta torica
AR710 / AR710C	1	7	Base monobloc Ø380
AR710 / AR710C	1	8	Cuerpo filtro Ø380
AR710 / AR710C	1	10	Valvula de 6 vias colector excentrico
AR710 / AR710C	1	12	Manguera de conexión de Ø38 x 580
AR710 / AR710C	1	13	Bomba
AR710 / AR710C	13	1	Abrazadera
AR710 / AR710C	13	2	Tuerca Ø 2 1/4"
AR710 / AR710C	13	3	Conexión espiga Ø38
AR710 / AR710C	13	4	Junta torica
AR715 / AR715C	1	7	Base monobloc Ø380
AR715 / AR715C	1	9	Cuerpo filtro Ø430
AR715 / AR715C	1	11	Valvula de 6 vias colector centrado
AR715 / AR715C	1	12	Manguera de conexión de Ø38 x 580
AR715 / AR715C	1	14	Bomba
AR715 / AR715C	14	1	Abrazadera
AR715 / AR715C	14	2	Tuerca Ø 2 1/4"
AR715 / AR715C	14	3	Conexión espiga Ø38
AR715 / AR715C	14	4	Junta torica
Manómetro, mangueras de conexión a piscina, skimmer y silex NO SUMINISTRADOS en los modelos AR700 / AR7050 / AR710 / AR715			

NECESIDADES PARA UNA CORRECTA INSTALACION

Por su facilidad de instalación este equipo puede ser montado por una persona adulta y en un periodo de tiempo de alrededor de 2 horas, con la precaución en todo momento de hacer un correcto seguimiento de las instrucciones detalladas en este manual.

Para una manipulación correcta de los componentes del equipo y su correcta instalación son necesarias las siguientes herramientas:

Función	**Herramienta**	**Herramienta alternativa**
Apretar las bridas de las mangueras	Destornillador stecker 7mm	Destornillador boca philips
Recortar el liner	Cutter	Cuchilla
Protección del tubo del colector	Trozo de plástico	Trozo de tela

2 ANTES DE CONECTAR EL FILTRO

Situación

Colocar el equipo sobre una superficie plana y sólida, a una distancia no inferior a 3,5 metros de la piscina (según norma de instalación de equipos eléctricos en piscinas vigente en cada zona o país.) y al mismo nivel del fondo de la piscina para evitar que entre aire en el circuito de depuración y el filtro se descebe (Fig. 2). Es conveniente resguardar el equipo del sol y la lluvia, y mantenerlo con una ventilación suficiente durante su funcionamiento. Nunca tapar el equipo durante su funcionamiento.

En los equipos en los que se proporcionan las mangueras de conexión con la piscina, éstas tienen una longitud de 4,5 metros. Comprobar, en todos los casos, que dicha longitud sea suficiente para la colocación del equipo en una superficie plana y sólida y situado a más de 3,5 metros de la piscina. En el caso que la longitud de las mangueras no fuera suficiente, contacte con su servicio técnico.

En el caso que no se proporcionen las mangueras con el equipo, se deberán usar unas mangueras de longitud mínima de 4,5 metros que permitan la situación del equipo de filtrado en una superficie plana y sólida y a más de 3,5 metros de la piscina. Dicho juego de mangueras existe cómo kit opcional en su vendedor.

Durante el proceso de instalación, en caso de duda contacte con el vendedor del equipo o con un servicio técnico autorizado.

Montaje

Una vez situado el equipo, proceder como sigue:
- Seguir las indicaciones de las hojas suministradas con el equipo en la que se indican los pasos iniciales para el montaje del equipo.
- Asentar correctamente el colector interior en el fondo del filtro, Fig.6.
- Tapar la boca del colector situado en el interior del filtro con un plástico protector para evitar la entrada de arena (Fig. 5).
- Introducir la arena en el interior del filtro:
    - 25 Kg en el modelo AR700 y AR7050
    - 40 Kg en el modelo AR710
    - 70 Kg en el modelo AR715.

La arena de sílex tiene una duración ilimitada. Sólo debe reponerse en caso de pérdida. Tome la referéncia del nivel de arena de sílex para reposiciones futuras, Fig.5.
- Eliminar los restos de arena de la boca del filtro y retirar el plástico protector.
- Vuelva a colocar la válvula selectora TOP con su junta y colocar el zuncho o cierre.
- Apretar fuertemente el tornillo del zuncho que sujeta la válvula al filtro, Fig.4.
- Proceda a conectar en los terminales de aspiración y de impulsión de la válvula selectora las mangueras de aspiración y de impulsión, fijandolas fuertemente con las abrazaderas, Fig.9, Fig.12.

NOTA: Comprobar que las mangueras permitan la situación y fijación del equipo de filtrado en una superficie plana y sólida y a más de 3,5 metros de la piscina (ver apartado 2.1).

- Proceda a conectar el otro extremo de la manguera de aspiración al skimmer apretando fuertemente con una abrazadera, repita la operación con el terminal de la boquilla de retorno y conecte la manguera de impulsión.
- Una vez instalado, deberemos efectuar un primer ciclo de lavado del filtro, para ello seguiremos lo descrito en el apartado 5.3

3 CONEXIÓN ELÉCTRICA

En todo lo referente a la instalación eléctrica debe seguirse la normativa:

Directiva Europea 2006/95/CE de aparatos de baja tensión

EN 60335-2-41, seguridad en aparatos electrodomésticos y análogos, requisitos particulares para bombas

Así cómo toda la normativa aplicable que haga referéncia "*a la construcción de instalaciones eléctricas en confines especiales. Piscinas y fuentes*", o análogas, vigente en cada zona o pais.

El equipo se debe conectar a una toma de tensión de 230 V de corriente alterna y 50 Hz, con conexión a tierra, protegida con un interruptor diferencial (RCD) con una corriente de funcionamiento residual asignada que no exceda de 30 mA. (No suministrado. Puede adquirirse en establecimientos de electrícidad)

Es imprescindible utilizar un dispositivo de desconexión múltiple con una separación mínima de 3 mm entre contactos para dejar sin tensión el equipo cuando no lo esté utilizado (No suministrado. Puede adquirirse en establecimientos de electrícidad)

4 VÁLVULA SELECTORA SUPERIOR

La válvula selectora superior del filtro es la encargada de seleccionar las 5 diferentes funciones del filtro: filtración (filter), lavado (backwash),enjuage(rinse), vaciado (waste) y cerrado (closed) en el modelo AR700
La válvula selectora superior del filtro es la encargada de seleccionar las 6 diferentes funciones del filtro: filtración (filter), lavado (backwash), recirculación (recirculate), enjuague (rinse), vaciado (waste) y cerrado (closed) en el modelo AR710 y AR715 y AR7050
.

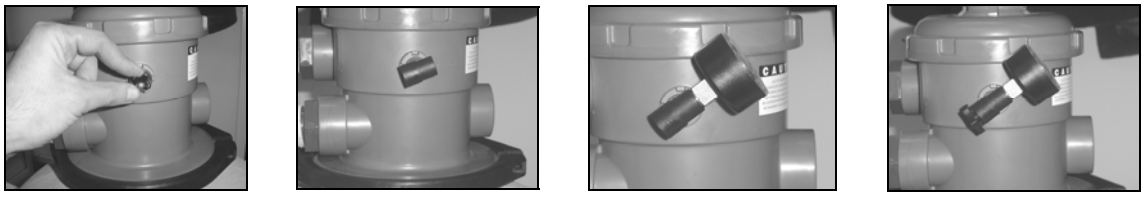
Para variar la posición de la válvula, proceder como sigue para los modelos AR7050, AR710 y AR715 y AR700: Fig.7.

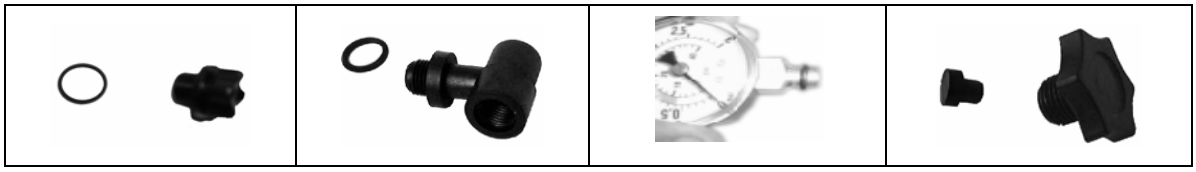
- Desconectar el equipo de la toma de corriente.
- Presionar firmemente el mando superior de la válvula desencajando el nervio delantero de su alojamiento, hasta que nos permita girar sobre sí mismo.
- Girar suavemente el mando hasta alinear el nervio delantero con el alojamiento de la operación deseada.

- Soltar el mando sin brusquedad, comprobando que el nervio delantero queda bien encajado en su alojamiento.

Montaje del manómetro en modelos AR700, AR7050, AR710 y AR715.

SIN MANOMÈTRO 1 2 3





5 FUNCIONAMIENTO

El funcionamiento de este equipo se basa en la capacidad de filtrado de la arena de sílex que hay en su interior. El agua de la piscina es impulsada por la bomba del filtro y forzada a pasar a través de la arena de sílex, quedando retenidas las impurezas del agua en al arena que actúa de elemento filtrante. El ambiente, árboles, polen, insectos y frecuencia de baños, son entre otros, los factores que determinan la suciedad del agua de la piscina. La arena de sílex del filtro se deberá limpiar con mayor o menor frecuencia en función de dichos factores (ver apartado 5.3) Para mantener en buen estado el agua de la piscina debemos además utilizar los productos químicos aconsejados por el fabricante (cloro, antialgas, floculante, etc.).

EN NINGUN CASO EL PRODUCTO QUIMICO DEBE PONERSE EN EL CESTO O A TRAVES DEL FILTRO, ELLO DETERIORARIA LOS MATERIALES DEL APARATO Y LIMITARIA SU EFICACIA

5.1 Cebado del filtro

Es imprecindible que el filtro se encuentre en todo momento correctamente cebado. Que el filtro no este cebado significa que en su interior se ha creado una cámara de aire que provoca una circulación defectuosa del agua, hecho este que impide el correcto filtraje de la misma por parte de la arena de sílex y perjudica el motor.
El filtro puede descebarse por varios motivos:

- Puesta en marcha de un equipo nuevo.
- Puesta en marcha de un equipo tras un periodo largo de falta de utilizacion.
- Tras utilizar un limpiafondos de aspiración.
- Absorción de aire por el skimmer debido a un nivel bajo en el agua de la piscina.
- Por una incorrecta utilización del equipo, tapa de aspiración o tapón de skimmer.

¿Cuándo está descebado el filtro?

Detectaremos que el filtro está descebado cuando:

- Comprobemos que el sonido del agua entrando en él suena a caida libre, hecho que nos indica que entre la entrada del agua y la arena de sílex se ha creado una cámara de aire.
- Comprobemos que por la boquilla de retorno salen burbujas de aire en exceso.
- Comprobemos que el limpiafondos (no suministrado) no aspira, teniendo límpia la arena de sílex tras un lavado.

¿Cómo cebar el filtro?

- Comprobar que la manguera de aspiración está conectada al skimmer y el paso abierto (no tiene el tapón puesto).
- Desconectar el equipo de la toma de corriente.
- Con la válvula en posición de filtrado (filter), aflojar ligeramente la tuerca de purga que se encuentra junto al manómetro para que permita salir el aire acumulado en el interior del filtro. Si no ha colocado el manómetro, colocar la valvula en posición de WASTE.
- Cuando se observe que solo sale agua (entre 1 y 2 minutos), cerrar de nuevo la tuerca de purga.
- Conectar el filtro a la toma de corriente y comprobar que ha dejado de oirse el sonido de caida del agua. De lo contrario repetiriamos la operación.

5.2 Filtración

NO MANIPULAR EN NINGUN CASO LA VALVULA CON EL MOTOR EN MARCHA

Previo a la filtración inicial realizar un lavado de la arena. (Apartado 5.3)
La válvula debe estar en posición de filtrado (FILTER). La vida útil del filtro se alarga con periodos de funcionamiento continuado no superiores a 4 h. Sus necesidades de filtración diarias vienen determinadas por el volumen en m^3 de agua de su piscina en relación a los m^3/h de caudal del filtro para una temperatura del agua de 21ºC aproximadamente y colocado a 3,5 m de su piscina. Deje al menos 2 h. de reposo al motor entre cada periodo de funcionamiento de 4 h.

$$\frac{\text{Volumen piscina en } m^3}{\text{Caudal filtro en } m^3/h} = \text{Horas necesarias}$$

Ejemplo:

$$\frac{42\ m^3}{5{,}5\ m^3/h} = 7{,}63 \text{ horas}$$

2 ciclos de 4 horas con un ciclo intermedio de 2 horas de descanso

En el tratamiento inicial de filtración debe respetar los periodos de reposo indicados. Se recomienda aumentar el tiempo de filtración cuanto mayor sea la temperatura del agua de su piscina.

5.3 Lavado del filtro

Con el proceso de autolavado procedemos a limpiar la arena de sílex del interior del filtro, para ello se invierte el sentido de circulación del agua mediante la válvula selectora superior. Este proceso debe hacerse con regularidad, para ello se debe estar atento a varios factores que determinan que la arena está sucia:

- Que se detecte una disminución del caudal de retorno, una vez comprobado que la bomba está bien cebada.
- Que el manómetro (Pos. 1 del despiece del monoblock) nos indique una presión excesiva (aguja indicando entre amarillo y rojo, o sobre rojo).

Para el lavado de la arena deberemos proceder como sigue en modelo AR 700,AR 7050, AR710 y AR715:

- Desconectar el equipo de la toma de corriente. No mover nunca la válvula selectora con el motor en marcha.
- Presionar firmemente el mando superior de la válvula desencajando el nervio delantero de su alojamiento que nos permite girar sobre sí mismo Fig.7.
- Girar suavemente el mando hasta alinear el nervio delantero con el alojamiento de la operación de lavado (backwash) Fig.7.
- Conectar la manguera de ø 38 mm x 1,5 m (en el modelo AR 715 mediante el manguito de 1 ½ ") a la salida de desagüe (waste) de la válvula y dirigir el otro extremo de la manguera a un desagüe o alcantarilla.Fig. 12
- Poner en marcha el filtro durante 2 min. aproximadamente, hasta que dejen de salir impurezas con el agua,en el modelo AR 715 se puede observar a través de la mirilla transparente que hay en el lateral.
- Parar el equipo
- Colocar la válvula en posición de enjuague (risne) y conectar el filtro durante unos segundos Fig.7.
- Parar el equipo, pasar a la posición deseada de filtrado (filter) (Fig.7) y retirar la manguera de la posición de desagüe (waste), si se desea (Fig.12)

5.4 Vaciado de la piscina

El equipo le permite vaciar casi totalmente la piscina una vez terminada la temporada de baño. Para ello deberá poner la válvula selectora superior en posición de desagüe (waste) (Fig.7), sin enchufar el equipo todavía, conectar la manguera de ø 38 mm x 1,5 m (en el modelo AR 715 mediante el manguito de 1 ½ ") a la salida de desagüe (waste) de la válvula y dirigir el otro extremo de la manguera a un desagüe o alcantarilla según modelo de skimmer y proceder como sigue:

En el modelo con skimmer de pared para Piscinas Dream Pool *(*Pos.1 Fig.3) y Piscinas Jet Pool *(*Pos.2 Fig.3):

- Retirar el cesto interior del skimmer y tapar la aspiración con el tapón suministrado a tal efecto.
- Desconectar la manguera de aspiración de la toma del skimmer, aflojando la abrazadera que la sujeta y sujetando la manguera para que no pierda agua y sumergirla inmediatamente en la piscina para que no se descebe.
- Lastrar el extremo esta manguera con un objeto pesado que no pueda dañar el liner, para forzar su inmersión hasta el fondo de la piscina.

- Poner en marcha el equipo y proceder al vaciado de la piscina. Recuerde que con la ayuda del equipo no se vaciará totalmente la piscina, cuando queden algunos centímetros de agua y la bomba ya no aspire deberá apagarla.
- Una vez puesto en marcha el equipo para vaciar la piscina, no interrumpir el proceso hasta el final para que no se descebe
- Si va a llenar nuevamente la piscina de agua, antes saque manualmente el agua restante sin dañar el liner.
- Si va a desmontar la piscina puede plegar el liner con el agua restante en el centro
- Retirar la chapa en el modelo DREAM POOL o los tubos en el modelo JET POOL
- Desplegar el liner para vaciarla completamente.
- No se debe efectuar esta operación salvo para desmontar la piscina.

En el modelo con skimmer autoportante para Piscinas Magic Pool: (Pos.3 Fig.3)

Además del desagüe que incorpora la piscina, puede utilizar el equipo para vaciarla:

- Levantar el skimmer autoportante hasta que quede colgando por el lateral exterior de la piscina, para evitar que el agua entre en él.
- Desconectar la manguera de aspiración de la toma del skimmer por la parte exterior de la pared de la piscina, aflojando la abrazadera que la sujeta con precaución para no dañar el liner y sujetando la manguera para que no pierda agua y sumergirla inmediatamente en la piscina para que no se descebe.
- Lastrar el extremo esta manguera con un objeto pesado que no pueda dañar el liner, para forzar su inmersión hasta el fondo de la piscina.
- Poner en marcha el equipo y proceder al vaciado de la piscina. Recuerde que con la ayuda del equipo no se vaciará totalmente la piscina, cuando queden algunos centímetros de agua y la bomba ya no aspire deberá apagarla.
- Una vez puesto en marcha el equipo para vaciar la piscina, no interrumpir el proceso hasta el final para que no se descebe .
- Si va a llenar nuevamente la piscina de agua, antes saque por el desagüe el agua restante sin dañar la piscina.

EVITAR QUE LA MANGUERA QUEDE SUCCIONANDO EL FONDO DE LINER DE LA PISCINA, PODRIA PERJUDICAR SERIAMENTE LA BOMBA AL FUNCIONAR SIN CIRCULACION DE AGUA O DAÑAR EL LINER POR SUCCION

5.5 Limpieza del fondo de la piscina

Para la limpieza del fondo de la piscina, puede aprovechar el equipo, con uno de los accesorios siguientes: Limpiafondos “Riñón”, Limpiafondos “Oval” (también precisará la manguera de ø38 mm y la pértiga). Consulte en su establecimiento o con el Servicio Postventa del fabricante de la piscina para su adquisición. Utilice siempre recambios originales.

Una longitud de manguera mayor a la necesaria para llegar a todos los puntos de la piscina dificulta su uso. Recorte el tramo de manguera que le sobre. Vigile que por los terminales de goma no pierda su estanqueidad.

Cebado de la manguera del limpiafondos:

Introducir despacio en el interior de la piscina el limpiafondos con la pertiga y la manguera conectada, verticalmente, dejando que se llene de agua, manteniendo el resto de la manguera fuera del agua. Vaya introduciendo la manguera en el agua despacio por tramos de 50 cm que deben quedar hundidos a la vez que se llenan completamente de agua, hasta el final, donde toda la manguera deberá quedar llena de agua y hundida. Si la manguera no está totalmente cebada, el limpiafondos no aspirará y podremos dañar la depuradora haciendola trabajar en vacío.

5.6 Enjuague en modelos AR710, AR715, AR700 y AR7050

Después de haber realizado un “LAVADO” del filtro y poner la instalación en posición de “FILTRACIÓN”, el agua durante unos segundos afluye a la piscina de color turbio, con el fin de evitar que esta agua turbia circule a la piscina existe esta posición de la válvula selectora “ENJUAGUE”.

Operar como sigue: Inmediatamente después del “LAVADO”, parar la bomba, situar la válvula en posición de “ENJUAGUE” (Fig.7).y conectar la bomba durante 1 minuto, transcurrido éste parar la bomba y situar la válvula en “FILTRACIÓN”.

5.7 Recirculación en modelos AR710 , AR715 y AR7050

En esta posición la válvula selectora efectúa el paso del agua procedente de la bomba directamente a la piscina, sin pasar por el interior del filtro. Fig.7.

5.8 Cierre

La posición de la válvula selectora cerrado (CLOSED) se utiliza para evitar la circulación del agua a través de las mangueras y del filtro. Fig.7.

6 SUSTITUCIÓN DEL CABLE
Si el cable de alimentación está dañado, sólo debe ser sustituido por el fabricante o su servicio técnico.

7 MANTENIMIENTO
Una vez terminada la temporada de baño se deberá guardar el equipo en lugar seco y protegido de la intemperie. Por este motivo y tras haber hecho un autolavado final para dejar límpia la arena de sílex, se desmontarán las mangueras y se vaciará totalmente de agua del filtro a través del tapón de vaciado del depósito.
Una vez expulsada toda el agua del equipo, limpiar cuidadosamente la rosca de residuos de arena de silex antes de volver a colocar el tapón, ya que podrian inutilizar la rosca.
El tapón de vaciado del deposito filtro solo debe ser usado en esta operación.
MUY IMPORTANTE: Antes de poner el equipo en funcionamiento tras un largo periodo de inactividad asegurarse que el filtro está correctamente cebado.

7.1 CUIDADOS DE LA BOMBA
La bomba del equipo está preparada para funcionar con un mínimo mantenimiento. Algunos elementos fungibles o sometidos a desgaste pueden tener una vida útil inferior al período de garantía del equipo.
Para cualquier acción de mantenimiento contacte con el fabricante de la piscina o su servicio técnico.

Solución de averias y servicio técnico.
Este equipo y sus instrucciones están especialmente diseñados para una utilización familiar, sin necesidad de una intervención profesional, salvo en casos excepcionales. Aquí presentamos los problemas y causas que pueden surgir con el paso de los años de vida útil del filtro y que usted puede solucionar. En caso de no poder solucionar su problema, contacte con el fabricante de la piscina en el teléfono y horario señalado en sus instrucciones.

MODELOS AR700 , AR7050 Y AR710

PROBLEMA	CAUSA	SOLUCIÓN
El filtro gotea por los terminales de las mangueras	Mala conexión de los terminales con las mangueras	Poner treflón en los alojamientos, introducir los terminales de las mangueras hasta el fondo del alojamiento y apretar las abrazaderas
Una vez puesto en marcha el equipo, no da caudal en la boquilla de retorno	La válvula no está en la posición de filtrado (filter)	Deconectar el equipo y situar la válvula en la posición correcta
	El equipo está por encima del nivel del agua y se ha descebado	Situar el equipo en una posición correcta y cebarlo
	La tapa de aspiración o el tapón del skimmer están puestos	Quitar la tapa de aspiración o el tapón del skimmer
Funcionamiento intermitente	Nivel del agua en skimmer bajo	Llenar la piscina y cebar el filtro
	El filtro está descebado	Proceder al cebado del filtro
El equipo da poco caudal	A causa de su uso el filtro está sucio	Efectuar un autolavado
	El filtro está descebado	Proceder al cebado del filtro
Sale agua por la boca del equipo	La zona de unión entre la válvula y el filtro está sucia	Limpie la arena de la boca, coloque correctamente la junta en la válvula y apriete fuertemente el zuncho
	El zuncho está flojo	
La válvula del filro gotea por el terminal de desagüe (WASTE)	Junta interior dañada por uso incorrecto del producto químico	Proceder al cambio de la tapa superior de la válvula.
		No poner el producto químico en el cesto prefiltro del skimmer ni en el filtro.
	Válvula cabezal rota por uso incorrecto (apriete excesivo).	Cambiar válvula cabezal, no apretar excesivamente
No arranca el motor. No hace ningún ruido ni vibración	Falta corriente en la línea eléctrica.	Verificar que hay corriente en la línea eléctrica

MODELOS AR715

PROBLEMA	CAUSA	SOLUCIÓN
El filtro gotea por los terminales de las mangueras	Mala conexión de los terminales con las mangueras	En los alojamientos con rosca poner teflón e introducir los terminales de las mangueras hasta el fondo del alojamiento y apretar las abrazaderas
Una vez puesto en marcha el equipo, no da caudal en la boquilla de retorno	La válvula no está en la posición de filtrado (filter)	Desconectar el filtro y situar la válvula en la posición correcta
	El filtro está por encima del nivel del agua y se ha descebado	Situar el filtro en una posición correcta y cebarlo
	La tapa de aspiración o el tapón del skimmer están puestos	Quitar la tapa de aspiración o el tapón del skimmer
Funcionamiento intermitente	Nivel del agua en skimmer bajo	Llenar la piscina y cebar el filtro
	El filtro está descebado	Proceder al cebado del filtro
El equipo da poco caudal	A causa de su uso el filtro está sucio	Efectuar un autolavado
	El filtro está descebado	Proceder al cebado del filtro
Sale agua por la boca del filtro	La zona de unión entre la válvula y el filtro está sucia	Limpie la arena de la boca, coloque correctamente la junta en la válvula y apriete fuertemente el zuncho
	El zuncho está flojo	
La válvula del filtro gotea por el terminal de desagüe (WASTE)	Junta interior dañada por uso incorrecto del producto químico	Proceder al cambio de la tapa superior de la válvula
		No poner el producto químico en el cesto prefiltro del skimmer ni en el filtro
	Válvula cabezal rota por uso incorrecto (apriete excesivo)	Cambiar válvula cabezal, no apretar excesivamente
No arranca el motor. No hace ningún ruido ni vibración	Falta corriente en la línea eléctrica.	Verificar que hay corriente en la línea eléctrica
No arranca el motor pero se oye un zumbido	Fallo en el motor	Contacte con el servicio postventa del fabricante de la piscina
Pérdida de agua	Analice la causa de la pérdida de agua.	Revise abrazaderas de las mangueras
		Si pierde entre la bomba y el motor, contacte con el servicio postventa del fabricante de la piscina

Lisez attentivement ce manuel avant d'installer le filtre et suivez méticuleusement les indications pendant son installation et son utilisation.

Conservez ce manuel en vue de futures consultations sur le fonctionnement de cet appareil.

- Pour tout ce qui concerne l'installation électrique, il faut suivre les normes :

La Directive Européenne 2006/95/CE, relative au matériel électrique destiné à être employé dans certaines limites de tension,
EN 60335-2-41, sécurité des appareils électrodomestiques et analogues, règles particulières pour les pompes

Ainsi que toute norme applicable ayant trait « *à la construction d'installations électriques, aussi bien dans des piscines couvertes que dans des piscines en plein air* », ou les normes analogues en vigueur dans chaque région ou pays.

- L'installation électrique doit être réalisée par des professionnels qualifiés en installations électriques. Cet appareil n'est pas destiné à des personnes avec des capacités physiques, sensorielles ou mentales réduites ou sans expérience, à moins qu'ils aient reçu une supervision ou des instructions concernant son utilisation par un responsable de la sécurité.
- La hauteur du sable ne doit pas dépasser les 2/3 de la hauteur du réservoir.
- Veillez à ce que l'appareil ne soit pas en marche pendant que vous utilisez la piscine.
- Ne faites pas fonctionner l'appareil s'il n'est pas amorcé correctement.
- Ne touchez JAMAIS le filtre en marche si vous avez le corps ou les mains humides.
- Chaque fois que vous devez manipuler le filtre ou la vanne, DÉBRANCHEZ-LES de la prise de courant.
- Vérifiez que le sol est bien sec avant de toucher l'équipement électrique.
- Ne placez pas le filtre dans un endroit où il pourrait être mouillé, cela pourrait provoquer une électrocution.
- Interdisez aux enfants et aux adultes de s'appuyer ou de s'asseoir sur l'appareil. Les enfants doivent être surveillés afin de s'assurer qu'ils ne jouent pas avec l'appareil.
- Il faut remplacer le câble flexible d'alimentation de cet appareil s'il est abîmé. Seuls le fabriquant ou ses services techniques peuvent le remplacer.
- L'appareil doit être branché sur une prise de courant de 230 V alternatif et de 50 Hz, avec prise de terre, protégé par un interrupteur différentiel (RCD) avec un courant de fonctionnement résiduel assigné qui n'excède pas 30mA.
- Il est indispensable d'utiliser un dispositif de sectionnement électrique multiple avec une séparation minimum de 3mm entre les contacts afin de déconnecter le filtre de l'alimentation électrique.

LISTE DU MATÉRIEL

L'appareil dont vous venez de faire l'achat est spécialement conçu pour être utilisé dans des piscines hors sol. Vous avez maintenant à votre disposition un équipement d'une conception innovatrice et d'une grande fonctionnalité comprenant l'ensemble des éléments nécessaires au filtrage de l'eau, c'est-à-dire le filtre, la pompe et la vanne de sélection. Les principaux éléments de cet appareil sont :

Modèle	***Fig.***	***Pos.***	***Dénomination***
AR700 / AR700C	1	1	Vanne 5 voies collecteur excentré
AR700 / AR700C	1	2	Filtre Ø300
AR700 / AR700C	1	3	Base injectée Ø300
AR700 / AR700C	1	4	Tuyau connexion Ø38 x 460
AR700 / AR700C	1	5	Carcasse de protection
AR7050/ AR7050C	1	10	Vanne 6 voies collecteur excentré

AR7050 / AR7050C	1	2	Filtre Ø300
AR7050 / AR7050C	1	3	Base injectée Ø300
AR7050 / AR7050C	1	4	Tuyau connexion de Ø38 x 360
AR7050 / AR7050C	1	6	Pompe
AR7050 / AR7050C	13	1	Collier
AR7050 / AR7050C	13	2	Écrou Ø 2 1/4"
AR7050 / AR7050C	13	3	Raccord de refoulement Ø38
AR7050 / AR7050C	13	4	Joint torique
AR710 / AR710C	1	7	Base injectée Ø380
AR710 / AR710C	1	8	Filtre Ø380
AR710 / AR710C	1	10	Vanne 6 voies collecteur excentré
AR710 / AR710C	1	12	Tuyau de connexion Ø38 x 580
AR710 / AR710C	1	13	Pompe
AR710 / AR710C	13	1	Collier
AR710 / AR710C	13	2	Écrou Ø 2 1/4"
AR710 / AR710C	13	3	Raccord de refoulement Ø38
AR710 / AR710C	13	4	Joint torique
AR715 / AR715C	1	7	Base monobloc Ø380
AR715 / AR715C	1	9	Filtre Ø430
AR715 / AR715C	1	11	Vanne 6 voies collecteur central
AR715 / AR715C	1	12	Tuyau de connexion de Ø38 x 580
AR715 / AR715C	1	14	Pompe
AR715 / AR715C	14	1	Collier
AR715 / AR715C	14	2	Écrou Ø 2 1/4"
AR715 / AR715C	14	3	Raccord de refoulement Ø38
AR715 / AR715C	14	4	Joint torique
Manomètre, tuyaux de connexion à piscine, skimmer et silex NON FOURNIS pour les modèles AR700 / AR7050 / AR710 / AR715			

CONSEILS POUR UNE INSTALLATION CORRECTE

Facile à monter, cet appareil peut être monté par une seule personne adulte et dans un temps approximatif de 2 heures. Les instructions détaillées dans ce manuel doivent être suivies correctement et à tout moment.
Pour une manipulation adéquate des composants du filtre et pour leur installation correcte, vous n'aurez besoin que des outils suivants :

Fonction	**Outil**	**Outil alternatif**
Serrer les colliers des tuyaux	Tournevis Stecker 7 mm	Tournevis tête Philips
Couper le liner	Cutter	Lame
Protection du tube du collecteur	Morceau de plastique	Morceau de tissu

1 AVANT DE CONNECTER LE FILTRE

Emplacement

Placer le filtre sur une surface plane et solide, à une distance minimum de 3,5 mètres de la piscine (selon la norme relative à la construction des installations électriques dans les piscines en vigueur dans chaque région ou pays) et au même niveau que le fond de la piscine afin d'éviter que l'air ne pénètre dans le circuit d'épuration et que le filtre se désamorce (fig. 2). Il est recommandé de protéger le filtre du soleil et de la pluie et qu'il soit toujours ventilé en cours de fonctionnement de l'appareil. Ne jamais le recouvrir pendant le fonctionnement.

Les tuyaux de raccordement fournis avec certains équipements mesurent 4,5 mètres. Vérifier néanmoins que cette longueur soit suffisante pour installer l'équipement à plus de 3,5 mètres de la piscine, sur une superficie plane et solide. Dans le cas où la longueur des tuyaux serait insuffisante, veuillez contacter votre service technique.
Dans le cas où les tuyaux ne seraient pas fournis avec l'équipement, utiliser des tuyaux d'une longueur minimum de 4,5 mètres qui permettront d'installer l'équipement à plus de 3,5 mètres de la piscine, sur une superficie plane et solide. Ce jeu de tuyaux est en vente chez votre revendeur en kit optionnel.

Pendant le processus d'installation, veuillez contacter le revendeur du matériel ou le service technique autorisé en cas de doute.

Montage

Une fois le filtre mis en place, procéder comme suit :

- Suivre les indications des feuilles, fournies avec le matériel, où sont mentionnées les différentes étapes du montage du matériel.
- Loger le collecteur intérieur correctement dans le fond du filtre (fig. 6).
- Boucher / protéger la bouche du collecteur situé à l'intérieur du filtre avec un plastique protecteur afin d´éviter l'entrée de sable (fig. 5).
- Introduire le sable à l'intérieur du filtre :
    - 25 Kg pour le modèle AR700 et AR7050
    - 40 Kg pour le modèle AR710
    - 70 Kg pour le modèle AR715.

La durée du sable de silex est illimitée. Il ne faut en remettre qu'en cas de perte. Prenez note du niveau qu'atteint le sable de silex pour savoir comment le compléter à l'avenir (fig. 5).

- Éliminer les restes de sable de la bouche du filtre et retirer le plastique de protection.
- Placer de nouveau la vanne de sélection TOP et le joint correspondant et placer la frette ou la fermeture.
- Bien serrer la fermeture fixant la vanne au filtre (fig. 4).
- Connecter sur les bornes d'aspiration et d'impulsion de la vanne les tuyaux d'aspiration et d'impulsion en les fixant fortement au moyen des brides (fig. 9 et fig. 12).

NOTE : Vérifier que les tuyaux permettent d'installer et de fixer l'équipement de filtrage sur une superficie plane et solide à plus de 3,5 mètres de la piscine (voir paragraphe 2.1).

- Connecter l'autre extrémité du tuyau d'aspiration en serrant très fort avec une bride. Répéter l'opération avec la borne de la buse de retour et connecter le tuyau d'impulsion.
- Une fois installé, il faut effectuer un premier cycle d'autolavage du filtre. Suivre les instructions données au paragraphe 5.3.

3 CONNEXION ÉLECTRIQUE

Pour tout ce qui a trait à l'installation électrique, il faut suivre les normes :

La Directive Européenne 2006/95/CE, relative au matériel électrique destiné à être employé dans certaines limites de tension,

EN 60335-2-41, sécurité des appareils électrodomestiques et analogues, règles particulières pour les pompes.

Ainsi que toute norme applicable ayant trait «*à la construction d'installations électriques, aussi bien dans des piscines couvertes que dans des piscines en plein air »*, ou les normes analogues en vigueur dans chaque région ou pays.

L'appareil doit être branché sur une prise de courant de 230 V alternatif et de 50 Hz, avec prise de terre, protégé par un interrupteur différentiel (RCD) avec un courant de fonctionnement résiduel assigné qui n'excède pas 30mA. (Non livré avec l'appareil, peut être acquis dans un magasin de matériel électrique.)

Il est indispensable d'utiliser un dispositif de sectionnement électrique avec une séparation minimum de 3 mm entre les contacts afin de laisser le filtre hors tension lorsqu'il n'est pas utilisé. (Non livré avec l'appareil, peut être acquis dans un magasin de matériel électrique.)

4 VANNE DE SÉLECTION SUPÉRIEURE

La vanne de sélection supérieure est chargée de sélectionner les 4 fonctions différentes du filtre : filtrage (filter), lavage du sable (backwash), vidange (waste), et fermeture (closed) pour les modèles AR700 et AR7050.
La vanne de sélection supérieure est chargée de sélectionner les 6 fonctions différentes du filtre : filtrage (filter), lavage du sable (backwash), remise en circulation (recirculate), rinçage (rinse), vidange (waste), et fermeture (closed) pour les modèles AR710 et AR715.

Pour modifier la position de la vanne, procéder comme suit pour les modèles AR7050, AR710 , AR715 et AR700 : fig. 7

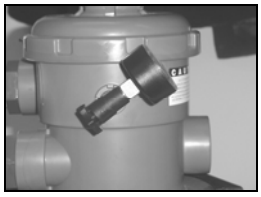
- Débrancher la prise de courant.
- Faire pression avec fermeté sur les commandes supérieures de la vanne en débloquant la nervure avant de son logement jusqu'à ce qu'elle nous permette de la faire tourner sur lui-même.
- Faire tourner doucement la commande jusqu'à ce qu'il soit possible d'aligner la nervure avant avec le logement de

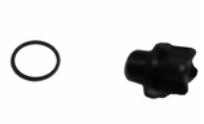
l'opération désirée.

- Laisser aller la commande sans brusquer, en vérifiant que la nervure avant soit bien encastrée dans son logement.

Montage du manomètre pour les modèles AR700, AR7050,AR710 et AR715

SANS MANOMÈTRE 1 2 3





5 FONCTIONNEMENT

Le fonctionnement de ce filtre se base sur la capacité de filtrage du sable de silex qu'il contient. L'eau de la piscine est impulsée par la pompe du filtre qui la force à passer à travers le sable de silex. Les impuretés en suspension dans l'eau sont alors retenues par le sable agissant comme élément filtrant. L'environnement de la piscine (arbres, pollen, insectes) ainsi que la fréquence des bains sont notamment des facteurs responsables du degré de saleté de l'eau de la piscine en fonction desquels il faudra nettoyer plus ou moins fréquemment le sable de silex du filtre, (voir paragraphe 5.3).
Pour maintenir l'eau de la piscine en bon état, il faut aussi utiliser les produits chimiques recommandés par le fabricant (chlore, produit antialgues, floculant, etc.).

LE PRODUIT CHIMIQUE NE DOIT JAMAIS ÊTRE MIS DANS LE PANIER OU VERSÉ À TRAVERS LE FILTRE, CELA POURRAIT DÉTÉRIORER LES MATÉRIAUX DE L'APPAREIL ET EN LIMITER L'EFFICACITÉ

5.1 Amorce du filtre

Le filtre doit toujours être amorcé correctement. Dans le cas contraire, cela signifie qu'il s'est produit une entrée d'air à l'intérieur qui risque de rendre la circulation de l'eau défectueuse. Ceci empêche le sable de silex de la filtrer correctement et abîme le moteur.
Le filtre peut s'être désamorcé pour différentes raisons :

- Mise en marche d'un nouvel équipement.
- Mise en marche d'un équipement après une longue période de non utilisation.
- Après utilisation d'un nettoyeur de fond à système d'aspiration.
- Absorption d'air par le skimmer en raison du bas niveau de l'eau dans la piscine.
- En raison d'une mauvaise utilisation de l'équipement, du bouchon d'aspiration ou de celui du skimmer.

Quand le filtre est-il désamorcé ?

On le détectera dans les cas suivants :

- Si l'eau pénétrant dans le filtre fait un bruit de chute libre, cela signifie qu'il s'est créé une chambre d'air entre l'entrée de l'eau et le sable de silex.
- Si les bulles d'air sortant de la buse de retour sont trop nombreuses.
- Si le nettoyeur de fond (non livré avec l'appareil) n'aspire pas, alors que le sable de silex est propre et vient d'être lavé.

Comment amorcer le filtre ?

- Vérifier que le tuyau d'aspiration est connecté au skimmer et que la prise d'eau est ouverte (le bouchon n'est pas mis).
- Débrancher le filtre de la prise de courant.

• Avec la vanne en position de filtrage (filter), desserrer légèrement l'écrou de vidange se trouvant à côté du manomètre pour faire sortir l'air accumulé à l'intérieur du filtre. Si vous n'avez pas installé le manomètre, positionnez la vanne sur WASTE.
• Lorsqu'il ne sort plus que de l'eau (au bout d' 1 ou 2 minutes), refermer l'écrou de vidange.
• Brancher le filtre à la prise de courant et vérifier qu'on n'entend plus le bruit de chute d'eau. Sinon, il faut répéter l'opération.

5.2 Filtrage

NE MANIPULER EN AUCUN CAS LA VANNE LORSQUE LE MOTEUR EST EN MARCHE

Avant la filtration initiale, réaliser un lavage du sable (paragraphe 5.3).
La vanne doit être en position de filtrage (FILTER). La vie utile du filtre est prolongée par des périodes d'utilisation continue n'excédant pas 4 heures. Vos besoins de filtrage quotidien sont déterminés par le volume d'eau de votre piscine calculés en m3 par rapport aux m^3/h de débit du filtre pour une température approximative de l'eau de 21º C et le filtre étant placé à 3,5 m de votre piscine. Il faut laisser le moteur reposer au moins 2 heures entre deux périodes de fonctionnement de 4 heures chacune.

$$\frac{\text{Volume piscine en } m^3}{\text{Débit filtre en } m^3/h} = \text{Heures nécessaires}$$

Exemple :

$$\frac{42\ m^3}{5{,}5\ m^3/h} = 7{,}63 \text{ heures}$$ 2 cycles de 4 heures avec un cycle intermédiaire de 2 heures de repos

Il faut respecter les périodes de temps de repos indiquées lors du traitement initial de filtrage. Il est recommandé d'augmenter la durée de filtration au fur et à mesure qu'augmente la température de l'eau de votre piscine.

5.3 Lavage du filtre

Le processus de lavage consiste à laver le sable de silex se trouvant à l'intérieur du filtre : le sens de circulation de l'eau est inversé par le biais de la vanne de sélection supérieure. Ce processus doit avoir lieu régulièrement. Il faut donc faire bien attention aux différents facteurs indiquant que l'eau est sale :

• Lorsqu'on détecte que le débit de retour de l'eau est plus faible, après avoir vérifié que la pompe était bien amorcée.
• Lorsque le manomètre (pos. 1 de la découpe du monobloc) indique un excès de pression (l'aiguille se trouvant entre le jaune et le rouge ou sur le rouge).

Pour le lavage du filtre, procéder comme suit pour les modèles AR700 ,AR7050,AR710 et AR7050 :

• Débrancher le filtre de la prise de courant. Ne jamais déplacer la vanne de sélection lorsque le moteur est en marche.
• Faire pression avec fermeté sur les commandes supérieures de la vanne, en débloquant la nervure avant de son logement, jusqu'à ce qu'il nous permette de la faire tourner sur elle-même (fig. 7).
• Faire tourner doucement la commande jusqu'à ce qu'il soit possible d'aligner la nervure avant avec le logement de l'opération de lavage (backwash) (fig. 7).
• Connecter le tuyau de ø 38 mm x 1,5 m(pour les modelès AR715 à l'aide du manchon de 1 ½") à la sortie d'eau (waste) de la vanne et diriger l'autre extrémité du tuyau vers le trop-plein ou vers un égout.
• Mettre le filtre en marche pendant 2 minutes environ, jusqu'à ce qu'il n'y ait plus d'impuretés dans l'eau qui n'en sorte. Per les modelès AR715 on peut observer le déroulement du processus par le petit hublot se trouvant sur le côté.
• Arrêter le filtre.
• Placer la vanne en position de rinçage (risne) et connecter le filtre pendant quelques secondes (fig. 7).
• Arrêter le filtre, mettre dans la position voulue de filtrage (filter) (fig. 7) et retirer le tuyau de la position d'évacuation de l'eau (waste), le cas échéant.(Fig.12)

5.4 Vidange de la piscine

Le filtre permet de vider presque complètement la piscine une fois la saison des bains terminée. Pour cela, vous devrez mettre la vanne de sélection supérieure en position d'évacuation de l'eau (waste) (fig. 7), mais sans encore connecter le filtre. Connecter le tuyau de ø 38 mm x 1,5 m pour les modelès AR715 à l'aide du manchon de 1 ½") à la sortie d'eau (waste) de la vanne et diriger l'autre extrémité du tuyau vers le trop-plein ou vers un égout. Et, selon le modèle de skimmer, procéder de la façon suivante :

Pour les modèles avec skimmer pour mur Piscines Dream Pool *(*pos. 1, fig. 3) et Piscines Jet Pool *(*pos. 2, fig. 3) :

- Retirer le panier intérieur du skimmer et boucher l'aspiration avec le bouchon prévu à cet effet.
- Déconnecter le tuyau d'aspiration de la prise du skimmer, en desserrant la bride de fixation. Tenir fermement le tuyau pour qu'il ne perde pas d'eau et le plonger immédiatement dans la piscine pour qu'il ne se désamorce pas.
- Lester l'extrémité de ce tuyau avec quelque chose de lourd qui ne puisse pas endommager le liner, pour en forcer l'immersion au fond de la piscine.
- Mettre la pompe en marche et vider la piscine. Ne pas oublier que le filtre ne permet pas de vider entièrement la piscine, et lorsqu'il ne restera plus que quelques centimètres d'eau que la pompe ne pourra plus aspirer, il faudra l'éteindre.
- Lorsque la pompe est mise en marche pour vider la piscine, ne pas interrompre le processus avant la fin pour qu'elle ne se désamorce pas.
- Si la piscine doit être de nouveau remplie d'eau, il faut d'abord retirer à la main l'eau qui reste, sans endommager le liner.
- Si la piscine va être démontée, on peut replier le liner contenant le reste d'eau au centre.
- Retirer la bonde sur le modèle DREAM POOL ou les tubes sur le modèle JET POOL
- Déplier le liner pour vider complètement la piscine.
- Cette opération ne doit être effectuée que lorsque l'on veut démonter la piscine.

Pour le modèle avec skimmer autoportant pour les Piscines Magic Pool : *(*pos. 3, fig. 3)

Hormis le trop-plein faisant partie de la piscine, on peut employer le purificateur pour la vider :

- Soulever le skimmer autoportant jusqu'à ce qu'il pende sur la paroi extérieure de la piscine, pour éviter que l'eau y pénètre.
- Déconnecter le tuyau d'aspiration de la prise du skimmer par la paroi extérieure de la piscine, en desserrant avec précaution la bride qui le fixe pour ne pas endommager le liner et tout en tenant bien le tuyau pour qu'il ne perde pas d'eau. Le plonger immédiatement dans la piscine pour qu'il ne se désamorce pas.
- Lester l'extrémité de ce tuyau avec quelque chose de lourd qui ne puisse pas endommager le liner, pour en forcer l'immersion au fond de la piscine.
- Mettre la pompe en marche et vider la piscine. Ne pas oublier que le filtre ne permet pas de vider entièrement la piscine, et que quand la pompe ne pourra plus aspirer d'eau, il faudra l'éteindre.
- Lorsque la pompe est mise en marche pour vider la piscine, ne pas interrompre le processus avant la fin pour qu'elle ne se désamorce pas.
- Si la piscine doit être de nouveau remplie d'eau, il faut d'abord retirer par le trop-plein l'eau restante sans endommager la piscine.

IL FAUT EVITER QUE LE TUYAU NE CONTINUE À ASPIRER LE FOND DE LINER DE LA PISCINE CAR UN FONCTIONNEMENT SANS CIRCULATION D'EAU POURRAIT ENDOMMAGER SERIEUSEMENT LA POMPE OU LE LINER PAR SUCCION.

5.5 Nettoyage du fond de la piscine

Pour nettoyer le fond de la piscine, on peut se servir de la pompe du filtre, à l'aide de l'un des accessoires suivants :

Nettoyeur de fonds « Riñón », Nettoyeur de fonds « Oval » (il vous faudra aussi un tuyau de ø38 mm et une perche).

Consultez votre revendeur ou le Service Après-Vente du fabricant de la piscine. N'utilisez que des pièces de rechange d'origine.

Un tuyau plus long que la longueur nécessaire pour parvenir à tous les points de la piscine complique la manipulation. Il vaut mieux couper l'excédent. Faites bien attention à ce que les extrémités de caoutchouc ne perdent pas leur étanchéité.

Amorçage du tuyau du nettoyeur de fond :

Introduire délicatement le nettoyeur de fonds avec la perche et le tuyau connecté à l'intérieur de la piscine, verticalement et en le laissant se remplir d'eau, tout en maintenant le reste du tuyau en dehors de l'eau. Introduire ensuite petit à petit le tuyau dans l'eau de 50 cm en 50 cm, les segments introduits devant se remplir complètement d'eau au fur et à mesure qu'ils s'enfoncent. À la fin de l'opération, tout le tuyau doit être plongé dans l'eau et rempli. Si le tuyau n'est pas entièrement amorcé, le nettoyeur de fonds ne pourrait pas aspirer et le purificateur pourrait s'endommager en fonctionnant à vide.

5.6 Rinçage pour les modèles AR710 et AR715

Après avoir réalisé un « LAVAGE » du filtre, mettre l'installation en position de « FILTRATION ». Pendant quelques secondes, l'eau qui coule dans la piscine est trouble ; pour éviter que cette eau trouble circule dans la piscine, il existe la position de la vanne de sélection « RINÇAGE ».

Procéder comme suit : Immédiatement après le « LAVAGE », arrêter la pompe, placer la vanne en position de

« RINÇAGE » (fig. 7) et faire marcher la pompe pendant une minute. Arrêter ensuite la pompe et placer la vanne en position de « FILTRATION ».

5.7 Remise en circulation pour les modèles AR710 et AR715

Dans cette position, la vanne de sélection effectue le passage de l'eau provenant de la pompe directement à la piscine, sans passer à l'intérieur du filtre (fig. 7).

5.8 Fermeture

On utilise la position fermée de la vanne de sélection (CLOSED) pour empêcher la circulation de l'eau à travers les tuyaux et le filtre (fig. 7).

6 REMPLACEMENT DU CÂBLE

Si le câble d'alimentation est endommagé, seuls le fabriquant ou le service technique peuvent le remplacer.

7 ENTRETIEN

Une fois terminée la saison des bains, il faut garder le filtre dans un endroit sec et à l'abri des intempéries.
À cet effet et après avoir réalisé un dernier autolavage afin que le sable de silex soit bien propre, il faut démonter les tuyaux et vider complètement d'eau le filtre en la faisant couler par le bouchon de vidange du réservoir.
Lorsqu'il ne reste plus du tout d'eau dans le filtre, nettoyer soigneusement la partie filetée pour qu'il n'y reste plus de sable de silex du tout avant de remettre en place le bouchon, car des résidus pourraient l'endommager.
Le bouchon de vidange du réservoir filtre ne doit être utilisé que pour cette opération.
TRÈS IMPORTANT : avant de remettre le filtre en fonctionnement après une longue période d'inactivité, vérifier que le filtre soit bien amorcé.

7.1 SOINS À APPORTER À LA POMPE

La pompe du filtre est préparée pour fonctionner sans aucun type d'entretien spécifique. Certains éléments consommables ou soumis à l'usure peuvent avoir une vie utile inférieure à la période de garantie de l'appareil. Pour toute action d'entretien, se mettre en contact avec le fabriquant de la piscine ou le service technique.

RESOLUTION DE PANNES ET SERVICE TECHNIQUE

Ce filtre et les instructions données ont été spécialement conçus pour être utilisés en famille, sans avoir à faire intervenir, sauf cas exceptionnel, un professionnel. Nous vous présentons ici quelques-uns des problèmes pouvant se présenter avec le temps et la diminution de la vie utile du filtre, ainsi que les causes de ces problèmes, et la solution à y apporter. Si cela s'avère impossible, mettez-vous en contact avec le fabricant de la piscine. Le numéro de téléphone et les horaires sont indiqués sur les instructions.

MODÈLES AR700 , AR7050 et AR710

PROBLÈME	CAUSE	SOLUTION
Le filtre goutte par les bouts des tuyaux.	Mauvaise connexion des bouts avec les tuyaux.	Mettre du Téflon dans les logements, introduire les extrémités des tuyaux jusqu'au fond de leur logement et bien serrer les brides.
Lorsque le filtre est en marche, il n'y a pas de débit dans la buse de retour.	La vanne n'est pas en position de filtrage (filter).	Débrancher le filtre et placer la vanne dans la bonne position.
	Le filtre se trouve au-dessus du niveau de l'eau, désamorcé.	Mettre le filtre dans la bonne position et l'amorcer.
	Les bouchons d'aspiration et du skimmer sont en place.	Retirer le couvercle d'aspiration ou celui du skimmer.
Fonctionnement par intermittence.	Niveau de l'eau trop bas dans le skimmer.	Remplir la piscine et amorcer le filtre.
	Le filtre est désamorcé.	Amorcer le filtre.
Le débit du filtre est faible.	Le filtre a été sali par l'usage.	Effectuer un autolavage.
	Le filtre est désamorcé.	Amorcer le filtre.

PROBLÈME	CAUSE	SOLUTION
L'eau sort par la buse du filtre.	La zone de raccord entre la vanne et le filtre est sale.	Retirer le sable de la buse, mettre correctement en place le joint de la vanne et bien serrer la fermeture.
	La fermeture est mal serrée.	
La vanne du filtre goutte par l'extrémité du trop-plein (WASTE).	Joint inférieur endommagé par le mauvais usage d'un produit chimique.	Remplacer le couvercle supérieur de la vanne.
		Ne pas mettre ce produit chimique dans le panier supérieur du skimmer.
	Vanne tête cassée à cause d'un usage incorrect (trop serrée).	Remplacer la vanne de la tête et ne pas serrer avec exagération.
Le moteur ne démarre pas. Il n'y a ni bruit ni vibration.	Pas de courant sur la ligne électrique.	Vérifier que le courant arrive bien.

MODÈLES AR715

PROBLÈME	CAUSE	SOLUTION
Le filtre goutte par les bouts des tuyaux.	Mauvaise connexion des bouts avec les tuyaux.	Mettre du Téflon dans les logements, introduire les extrémités des tuyaux jusqu'au fond de leur logement et bien serrer les brides.
Lorsque le filtre est en marche, il n'y a pas de débit dans la buse de retour.	La vanne n'est pas en position de filtrage (filter).	Débrancher le filtre et placer la vanne dans la bonne position.
	Le filtre se trouve au-dessus du niveau de l'eau, désamorcé.	Mettre le filtre dans la bonne position et l'amorcer.
	Les bouchons d'aspiration et du skimmer sont en place.	Retirer le couvercle d'aspiration ou celui du skimmer.
Fonctionnement par intermittence.	Niveau de l'eau trop bas dans le skimmer.	Remplir la piscine et amorcer le filtre.
	Le filtre est désamorcé.	Amorcer le filtre.
Le débit du filtre est faible.	Le filtre a été sali par l'usage.	Effectuer un autolavage.
	Le filtre est désamorcé.	Amorcer le filtre.
L'eau sort par la buse du filtre.	La zone de raccord entre la vanne et le filtre est sale.	Retirer le sable de la buse, mettre correctement en place le joint de la vanne et bien serrer la fermeture.
	La fermeture est mal serrée.	
La vanne du filtre goutte par l'extrémité du trop-plein (WASTE).	Joint inférieur endommagé par le mauvais usage d'un produit chimique.	Remplacer le couvercle supérieur de la vanne.
		Ne pas mettre ce produit chimique dans le panier supérieur du skimmer.
	Vanne tête cassée à cause d'un usage incorrect (trop serrée).	Remplacer la vanne de la tête et ne pas serrer avec exagération.

PROBLÈME	CAUSE	SOLUTION
Le moteur ne démarre pas. Il n'y a ni bruit ni vibration.	Pas de courant sur la ligne électrique.	Vérifier que le courant arrive bien.
Le moteur ne démarre pas mais on entend un bourdonnement.	Moteur grillé.	Mettez-vous en contact avec le service après-vente du fabricant de la piscine.
Perte d'eau.	Analyser la cause de la perte d'eau.	Vérifier les brides des tuyaux.
		Si l'eau fuit entre la pompe et le moteur, mettez-vous en contact avec le service après-vente du fabricant de la piscine.

Lesen Sie diese Anleitung genau durch, bevor Sie mit der Installation beginnen und folgen Sie sowohl während der Montage als auch während der Benutzung genau den Anweisungen.
Bewahren Sie diese Anleitung für künftige Fragen zur Funktionsweises des Gerätes auf.

- Alles, was im Zusammenhang mit der elektrischen Installation steht, muss mit folgender Norm übereinstimmen:

Europäische Richtlinie 2006/95/EWG zu Niederspannungsgeräten,
EN 60335-2-41, Sicherheit von elektrischen Haushaltsgeräten und Gleichwertigem, besondere Anforderungen an Pumpen

Des Weiteren gelten jegliche andwendbaren Gesetze zur „*Konstruktion von Elektroinstallationen in besonderem Umfeld. Schwimmbecken und Springbrunnen*“, oder Gleichwertigem, die in der jeweiligen Region oder dem jeweiligen Land vorliegen.

- Die elektrische Installation muss von dazu qualifizierten Fachleuten vorgenommen werden. Diese Anlage ist nicht geeignet für Personen mit körperlicher, mentaler oder Wahrnehmungseinschränkung oder ohne Erfahrung, es sei denn, Sie werden während der Benutzung von einem Sicherheitsverantwortlichen beaufsichtigt.
- Die Höhe des Sandes darf nicht mehr als 2/3 des Tanks betragen.
- Während der Benutzung des Schwimmbeckens darf das Gerät nicht eingeschaltet sein.
- Das Gerät darf nicht verwendet werden, wenn es nicht ordnungsgemäß gefüllt ist.
- Berühren Sie das eingeschaltete Gerät NIE mit feuchtem Körper oder feuchten Händen.
- UNTERBRECHEN Sie die Stromverbindung, wann immer Sie an Gerät oder Ventil hantieren,
- Vergewissern Sie sich, dass der Boden trocken ist, bevor Sie an der Elektrik hantieren.
- Platzieren Sie das Gerät nicht unter Wasser oder so, dass es untergetaucht werden kann.
- Weder Kinder noch Erwachsene dürfen sich auf das Gerät stützen oder sich daran anlehnen. Kinder müssen beaufsichtigt werden, um sicher zu stellen, dass Sie nicht mit dem Gerät spielen.
- Sollte das flexible Stromversorgungskabel beschädigt sein, muss es durch den Hersteller bzw. durch dessen technischen Kundendienst ersetzt werden. Kontaktieren Sie im Zweifelsfall den technischen Kundendienst.
- Das Gerät muss an einen 230 V 50 Hz Wechselstromanschluß mit Erdung angeschlossen werden. Dieser muss durch ein Differential (RCD) mit höchstens 30 mA gesichert sein.
- Es muss unbedingt ein Allpolschalter mit einem Mindestabstand von 3 mm zwischen den Kontakten verwendet werden, um den Filter von der Stromversorgung trennen zu können.

1 LIEFERKOMPONENTEN

Das Gerät, das Sie soeben gekauft haben, ist ein Apparat, der speziell für hohe Schwimmbecken konzipiert und entworfen wurde. Innovativ im Design und mit großer Funktionsfähigkeit, verfügen Sie über die verschiedenen Bestandteile, die zum Filtern des Wassers notwendig sind: Filter, Pumpe und Wechselventil in ein und demselben Gerät. Die wichtigsten Bestandteile dieses Gerätes sind:

Modell	***Abb.***	***Pos.***	***Bezeichnung***
AR700 / AR700C	1	1	Ventil mit 5 Leitungen; Auffangbehälter außen
AR700 / AR700C	1	2	Filter Ø300
AR700 / AR700C	1	3	Basis Monobloc Ø300
AR700 / AR700C	1	4	Verbindungsschlauch Ø38 x 460
AR700 / AR700C	1	5	Motorabdeckung
AR7050/ AR7050C	1	10	Ventil mit 6 Leitungen; Auffangbehälter außen

AR7050 / AR7050C	1	2	Filter Ø300
AR7050/ AR7050C	1	3	Basis Monobloc Ø300
AR7050/ AR7050C	1	4	Verbindungsschlauch Ø38 x 360
AR7050/ AR7050C	1	6	Pumpe
AR7050 / AR7050C	13	1	Klammer
AR7050 / AR7050C	13	2	Mutter Ø 2 1/4"
AR7050/ AR7050C	13	3	Dübelverbindung Ø38
AR7050 / AR7050C	13	4	O-Ring
AR710 / AR710C	1	7	Basis Monobloc Ø380
AR710 / AR710C	1	8	Filter Ø380
AR710 / AR710C	1	10	Ventil mit 6 Leitungen; Auffangbehälter außen
AR710 / AR710C	1	12	Verbindungsschlauch Ø38 x 580
AR710 / AR710C	1	13	Pumpe
AR710 / AR710C	13	1	Klammer
AR710 / AR710C	13	2	Mutter Ø 2 1/4"
AR710 / AR710C	13	3	Dübelverbindung Ø38
AR710 / AR710C	13	4	O-Ring
AR715 / AR715C	1	7	Basis Monobloc Ø380
AR715 / AR715C	1	9	Filter Ø430
AR715 / AR715C	1	11	Ventil mit 6 Leitungen; Auffangbehälter außen
AR715 / AR715C	1	12	Verbindungsschlauch Ø38 x 580
AR715 / AR715C	1	14	Pumpe
AR715 / AR715C	14	1	Klammer
AR715 / AR715C	14	2	Mutter Ø 2 1/4"
AR715 / AR715C	14	3	Dübelverbindung Ø38
AR715 / AR715C	14	4	O-Ring
Manometer (Druckmesser), Verbindungsschläuche, Skimmer und Quarz-Sand werden NICHT MITGELIEFERT bei den Modellen AR700 / AR7050 / AR710 / AR715			

VORRAUSSETZUNGEN FÜR DIE KORREKTE INSTALLATION

Dank der Einfachheit der Installation dieses Gerätes kann diese durch einen Erwachsenen innerhalb von rund zwei Stunden durchgeführt werden, wobei jederzeit mit Vorsicht hantiert werden muss und die detaillierten Anweisungen in dieser Anleitung genau einzuhalten sind.

Zur korrekten Handhabung der Bestandtteile des Gerätes und seiner ordnungsgemäßen Installation benötigen Sie folgende Werkzeuge:

Funktion	**Werkzeug**	**Alternative**
Anziehen der Schlauchklammern	Schraubendreher Stecker 7 mm	Schraubendreher Philips
Ausschneiden des Liners	Cutter	Messer
Schutz des Auffangbehälter-Rohres	Stück Plastik	Stück Stoff

2 VOR DEM ANSCHLIESSEN DES FILTERS

Lage

Den Filter auf einer ebenen und stabilen Unterfläche anbringen, und zwar in einem Abstand von mindestens 3,5 Meter vom Schwimmbecken (folgend der Norm zur Installation von Elektrogeräten in Schwimmbecken in der jeweiligen Region oder dem jeweiligen Land) und auf der gleichen Höhe wie der Schwimmbeckenboden, um zu vermeiden, dass in den Reinigungskreislauf Luft eindringt und sich der Filter entleert (Abb. 2). Der Filter sollte vor Sonne und Regen geschützt und ausreichende Belüftung vorhanden sein, wenn er eingeschaltet ist. Berühren Sie das Gerät nie in eingeschaltetem Zustand.

Bei den Geräten, die mit Schläuchen für die Verbindung mit dem Schwimmbecken geliefert werden, beträgt deren Länge 4,5 Meter. Überprüfen Sie auf jeden Fall, ob die genannte Länge ausreicht, um das Gerät auf einer ebenen und stabilen Fläche in mindestens 3,5 Metern Entfernung anzubringen. Sollte die Länge der Schläuche nicht ausreichen, kontaktieren Sie bitte Ihren technischen Kundendienst.

Falls die Schläuche nicht mit dem Gerät geliefert werden, müssen Schläuche mit einer Mindestlänge von 4,5 Metern verwendet werden, mit denen das Gerät auf einer ebenen und stabilen Fläche in mindestens 3,5 Metern Entfernung vom Becken angebracht werden kann. Die genannte Garnitur an Schläuchen ist als Zusatzpaket bei Ihrem Händler erhältlich.

Sollten während des Installationsprozesses Zweifel auftauchen, kontaktieren Sie den Verkäufer des Gerätes oder einen autorisierten Technikerdienst.

Montage

Haben Sie das Gerät einmal platziert, gehen Sie wie folgt vor:

- Folgen Sie den Anweisungen in der Anleitung, die mit dem Gerät geliefert wurden und auf denen die ersten Schritte zur Montage desselben angegeben sind.
- Bringen Sie den inneren Auffangbehälter ordnungsgemäß am Filterboden an (Abb. 6).
- Decken Sie die Mündung des Auffangs im Inneren des Filters mit einem Stück Schutzplastik ab, um das Eindringen von Sand zu vermeiden (Abb. 5).
- Befüllen Sie das Innere des Filters mit Sand:
    - 25 kg für die Modelle AR700 und AR7050.
    - 40 kg für das Modell AR710
    - 70 kg für das Modell AR715.

Der Quarz-Sand hat uneingeschränkte Haltbarkeit. Lediglich bei Schwund muss nachgefüllt werden. Merken Sie sich die Sandhöhe für zukünftige Auffüllungen (Abb. 5).

- Säubern Sie die Filtermündung von Sandresten und entfernen Sie das Schutzplastik.
- Setzen Sie das Wechselventil TOP erneut mit seiner Dichtung zusammen und bringen Sie die Klammer oder den Verschluss an.
- Ziehen Sie die Klammerschraube, die Ventil und Filter verbindet, fest an (Abb. 4).
- Fahren Sie fort, indem Sie die Endstücke des Wechselventils zur Absaugung und zum Ausstoß mit den Schläuchen für Absaugung und Ausstoß verbinden, und fixieren Sie diese gut mit den Klammern (Abb. 9 und Abb. 12).

ANMERKUNG: Überprüfen Sie, ob die Schläuche ausreichen, um das Filtergerät auf einer ebenen und stabilen Fläche in mindestens 3,5 Metern Entfernung vom Schwimmbecken anzubringen (siehe Abschnitt 2.1).

- Bringen Sie als nächstes das andere Ende des Absaugschlauches am Skimmer an, wobei Sie dieses fest mit einer Klammer anziehen. Wiederholen Sie diesen Vorgang mit der Rückflussdüse und befestigen Sie den Ausstoßschlauch.
- Sobald die Installation abgeschlossen is, muss ein erster Durchlauf zur Reinigung des Filters durchgeführt werden. Befolgen Sie dazu die Anweisungen unter Abschnitt 5.3.

3 ELEKTROANSCHLUSS

Bei der gesamten Installation elektrischer Komponenten muss folgende Norm befolgt werden:

Europäische Richtlinie 2006/95/EWG zu Niederspannungsgeräten,
EN 60335-2-41, Sicherheit von elektrischen Haushaltsgeräten und Gleichwertigem, besondere Anforderungen an Pumpen

Des Weiteren gelten jegliche andwendbaren Gesetze zur *„Konstruktion von Elektroinstallationen in besonderem Umfeld. Schwimmbecken und Springbrunnen“,* oder Gleichwertigem, die in der jeweiligen Region oder dem jeweiligen Land vorliegen.

Das Gerät muss an einen 220/230 V 50 Hz Wechselstromanschluß mit Erdung angeschlossen werden. Dieser muss durch ein Differential (RCD) mit höchstens 30 mA gesichert sein (nicht Teil des Lieferumfangs; im Elektrohandel erhältlich).

Es muss unbedingt ein Allpolschalter mit einem Mindestabstand von 3 mm zwischen den Kontakten verwendet werden, um den Filter von der Stromversorgung trennen zu können (nicht Teil des Lieferumfangs; im Elektrohandel erhältlich).

4 OBERES WECHSELVENTIL

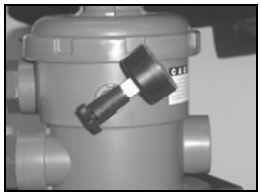
Über das obere Wechelventil werden bei den Modellen AR700 die 5 verschiedenen Funktionen des Filters gewählt: Filterung (FILTER), Reinigung (BACKWASH), Spülung (rinse),Entleerung (WASTE) und Schließen (CLOSED).
Bei den Modellen AR710 ,AR7050, AR715 werden durch das obere Wechelventil die sechs verschiedenen Funktionen des Filters durchgeführt: Filterung (FILTER), Reinigung (BACKWASH), Umkehr der Wasserflussrichtung (RECIRCULATE), Spülung (RINSE), Entleerung (WASTE) und Schließen (CLOSED).

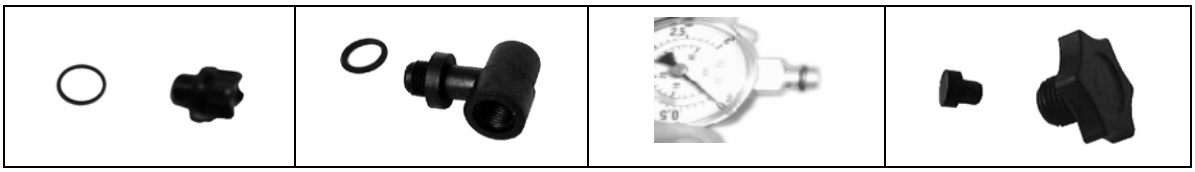
<u>Um die Position des Ventils zu ändern, gehen Sie bei den Modellen AR7050, AR710 , AR715 und AR700 wie folgt vor: Abb. 7</u>

- Unbrechen Sie die Stromzufuhr zum Gerät.
- Drücken Sie fest auf den oberen Griff des Ventils und haken Sie die vordere Feder aus, bis Sie diese um sich selbst drehen können.
- Drehen Sie sanft an der Steuerung, bis die Feder mit der Position des gewünschten Vorganges in einer Linie ist.
- Lassen Sie die Steuerung vorsichtig los und stellen Sie sicher, dass die vordere Feder richtig an ihrem Platz einrastet.

Montage des Manometers (Druckmesser) der Modelle AR700, AR7050, AR710, AR715

OHNE MANOMETER 1 2 3





5 FUNKTIONSWEISE

Die Funktionsweise dieses Gerätes basiert auf der Filterfähigkeit des Quarz-Sandes, der sich in seinem Inneren befindet. Das Wasser aus dem Schwimmbecken wird von der Filterpumpe ausgestoßen und durch Quarz-Sand gedrückt, wobei die Verunreinigungen des Wassers im Sand, der wie ein Filterelement arbeitet, zurückgehalten werden. Das Umfeld, Bäume, Blütenstaub, Insekten und Badehäufigkeit sind unter anderem Faktoren, von denen die Verunreinigung des Wassers abhängt. Der Quarz-Sand muss daher mehr oder weniger oft gereinigt werden (siehe Abschnitt *5.3*).
Um das Wasser im Schwimmbecken in gutem Zustand zu halten, müssen außerdem die vom Hersteller empfohlenen chemischen Produkte verwendet werden (Chlor, Algenschutzmittel, Klarmacher-Tabletten, etc.).

AUF KEINEN FALL DÜRFEN CHEMISCHE PRODUKTE AUF DEN KORB ODER DURCH DEN FILTER GELEITET WERDEN. SIE WÜRDEN DAS MATERIAL DES GERÄTES ZERSTÖREN UND SEINE FUNKTIONSFÄHIGKEIT EINSCHRÄNKEN

5.1 Befüllung des Filters

Der Filter muss unbedingt und zu jeder Zeit ordnungegemäß gefüllt sein. Falls der Filter nicht gefüllt ist, bedeutet dies, dass sich in seinem Inneren eine Luftkammer gebiltdet hat, die eine fehlerhafte Zirkulation des Wassers bewirkt, wodurch eine ordnungsgemäße Filterung des Wassers durch den Quarz-Sand verhindert und der Motor beschädigt wird
Der Filter kann aus veschiedenen Gründen leer sein:

- Inbetriebnahme eines neuen Gerätes.
- Inbetriebnahme eines Gerätes, das für längere Zeit nicht verwendet wurde.
- Nach einer Bodenreinigung durch Saugen.
- Luftansaugung über den Skimmer auf Grund eines zu niedrigen Wasserspiegels im Schwimmbecken.
- Nicht ordnungsgemäße Anwendung des Gerätes, des Ansaugdeckels oder des Skimmerpfropfens.

Wann ist der Filter leer?
Folgende Anzeichen deuten darauf hin, dass der Filter leer ist:

- Das Wasser, das durch den Filter fließt, macht ein fallendes Geräusch. Dies zeigt an, daß sich zwischen dem Wassereintritt und dem Quarz-Sand eine Luftblase gebildet hat.
- Aus der Rückflussdüse treten übermäßig viele Luftblasen aus.

• Der Bodenreiniger (nicht im Lieferumfang enthalten) saugt nicht, obwohl der Quarz-Sand nach einer Reinigung sauber ist.

Wie ist der Filter zu füllen?

• Überprüfen Sie, ob der Absaugschlauch mit dem Skimmer verbunden und der Durchfluss geöffnet ist (der Pfropfen ist entfernt).
• Unterbrechen Sie die Stromzufuhr zum Gerät.
• Mit dem Ventil in der Stellung Filterung (FILTER) wird die Entleerungsschraube, die sich neben dem Manometer befindet, leicht gelockert, damit die sich im Inneren des Filters angesammelte Luft entweichen kann. Wenn Sie das Manometer nicht angebracht haben, stellen Sie das Ventil auf die Position WASTE.
• Sobald nur noch Wasser ausfließt (zwischen ein und zwei Minuten), ist die Schraube zur Entleerung wieder zur schließen.
• Schließen Sie den Filter wieder an die Stromzufuhr an und überprüfen Sie, ob nun kein Geräusch von fallendem Wasser mehr zu hören ist. Sollte dies nach wie vor der Fall sein, ist der Vorgang zu wiederholen.

5.2 Filterung

HANTIEREN SIE AUF KEINEN FALL AM VENTIL, WENN DER MOTOR IN BETRIEB IST

Vor der ersten Filterung ist eine Reinigung des Sandes vorzunehmen (Abschnitt 5.3).
Das Ventil muss sich in der Stellung zur Filterung (FILTER) befinden. Die Lebensdauer des Filters wird verlängert, wenn er nicht länger als vier Stunden hintereinander verwendet wird. Wie lange die tägliche Filterung dauert, hängt vom Verhältnis des Wasservolumens Ihres Beckens in m3 zur Durchflussmenge durch den Filter in m3/h bei einer Wassertemperatur von rund 21 Grad und einer Entfernung von 3,5 Metern von Ihrem Schwimmbecken ab.
Schalten Sie den Motor nach vier Stunden Laufzeit zumindest zwei Stunden aus.

$$\frac{\text{Beckenvolumen in m}^3}{\text{Durchfluss Filter in m}^3\text{/h}} = \text{Nötige Stunden}$$

Beispiel:

$$\frac{42\ \text{m}^3}{5{,}5\ \text{m}^3\text{/h}} = 7{,}63\ \text{St.}$$

2 Durchläufe à 4 Stunden mit einer Unterbrechung von 2 Stunden (Pause)

Beim ersten Filtervorgang müssen die angegebenen Ruhepausen eingehalten werden. Es wird empfohlen, die Filterzeit mit zunehmender Wassertemperatur in Ihrem Schwimmbecken zu erhöhen.

5.3 Reinigung des Filters

Bei der automatischen Reinigung des Filters wird der Quarz-Sand im Inneren des Filters gesäubert. Hierfür wird mit dem oberen Wechselventil die Laufrichtung des Wassers umgedreht. Dieser Vorgang muss regelmäßig erfolgen, weshalb auf einige Faktoren zu achten ist, die anzeigen, ob der Sand verschmutzt ist:

• Verringerung des Rückflusses, obwohl die Pumpe ordnungsgemäß gefüllt ist.
• Das Manometer (Pos. 1 der Aufteilung des Monobloc) zeigt einen zu hohen Druck an (Nadel zwischen dem gelben und roten Bereich, oder im roten Bereich).

Zur Reinigung des Sandes gehen Sie bei den Modellen AR7050, AR710,AR700 und AR715 wie folgt vor:

• Unterbrechen Sie die Stromzufuhr zum Gerät. Bewegen Sie das Wechselventil nie, solange der Motor in Betrieb ist.
• Drücken Sie fest auf den oberen Antrieb des Ventils und lösen Sie die obere Feder aus ihrer Position, wodurch Sie diese um sich selber drehen können (Abb. 7).
• Drehen Sie den Antrieb sanft, bis sich die vordere Feder mit der Position des Vorganges Reinigung (BACKWASH) in einer Linie befindet (Abb. 7).
• Verbinden Sie den Schlauch mit den Maßen ø 38 mm x 1,5 m (das modell AR715 über die Muffe von 1 ½“) mit dem Abwasserausgang (WASTE) des Ventils und leiten Sie das andere Ende des Schlauches zu einem Abfluss oder Abwasserkanal.(Fig.12)
• Schalten Sie den Filter für rund zwei Minuten ein, bis das austretende Wasser nicht mehr verunreinigt ist. Dies können Sie über das Sichtfenster an der Seite sehen.
• Schalten Sie das Gerät aus.

- Stellen Sie das Ventil auf die Spül-Position (RINSE) und schalten Sie den Filter einige Sekunden lang ein (Abb. 7).
- Schalten Sie das Gerät aus, stellen Sie auf die gewünschte Position zur Filterung (FILTER) (Abb. 7) und nehmen Sie den Schlauch vom Abwasserausgang (WASTE), wenn gewünscht.

5.4 Entleeren des Schwimmbeckens

Mit diesem Gerät können Sie Ihr Schwimmbecken am Ende der Badesaison fast vollständig entleeren. Hierzu stellen Sie das Wechselventil auf die Position Entlleerung (WASTE) (Abb. 7). Bevor Sie das Gerät einschalten, schließen Sie den Schlauch mit den Maßen ø 38 mm x 1,5 m an den Abwasserausgang (WASTE) des Ventils an und leiten das andere Ende des Schlauches zu einem Abfluss oder Abwasserkanal. Je nach Skimmer ist wie folgt vorzugehen:

Für das Modell mit Wandskimmer für Dream Pool-Schwimmbecken (Pos. 1, Abb. 3) und Jet Pool-Schwimmbecken (Pos. 2, Abb. 3):

- Ziehen Sie den Innenkorb des Skimmers heraus und verschließen Sie die Absaugung mit dem dafür vorgesehenen, mitgelieferten Pfropfen.
- Entfernen Sie den Absaugschlauch vom Eingang des Skimmers, lockern Sie die Klammer, die Sie zusammenhält, und halten Sie den Schlauch, damit kein Wasser austritt. Führen Sie den Schlauch sofort ins Schwimmbecken, damit er sich nicht entleert.
- Beschweren Sie das Ende dieses Schlauches mit einem schweren Gegenstand, damit er den Liner nicht beschädigt und bis zum Boden des Schwimmbeckens absinkt.
- Schalten Sie das Gerät ein und beginnen Sie mit dem Entleeren des Beckens. Vergessen Sie nicht, dass das Becken mit Hilfe des Gerätes nicht vollkommen entleert werden kann. Sobald nur mehr einige Zentimeter Wasser vorhanden sind, und die Pumpe nicht mehr saugt, müssen Sie das Gerät ausschalten.
- Sobald das Gerät zum Entleeren des Schwimmbeckens eingeschaltet wurde, dürfen Sie den Vorgang bis zum Ende nicht mehr unterbrechen, damit sich das Gerät nicht entleert.
- Falls Sie das Becken erneut mit Wasser befüllen, schöpfen Sie zuerst das restliche Wasser manuell aus, ohne den Liner zu beschädigen.
- Falls Sie das Becken abbauen, könne Sie den Liner mit dem restlichen Wasser in der Mitte zusammenfalten.
- Entfernen Sie das Blech beim Modell DREAM POOL oder die Rohre des Modells JET POOL
- Breiten Sie den Liner ganz aus, um das Becken vollständig zu entleeren.
- Dieser Vorgang darf nur durchgeführt werden, um das Schwimmbecken abzubauen.

Für das Modell mit selbsttragendem Skimmer für Magic Pool-Schwimmbecken (Pos. 3, Abb. 3):

Neben dem Abfluss des Schwimmbeckens können Sie zu dessen Entleerung auch dieses Gerät verwenden:

- Heben Sie den selbsttragenden Skimmer so weit, dass er auf der Außenseite des Beckens hängt, um zu vermeiden, dass das Wasser auf ihn trifft.
- Entfernen Sie den Absaugschlauch vom Ausgang des Skimmers an der Beckenwand, indem Sie die Klammer, die sie zusammenhält, vorsichtig lockern, um den Liner nicht zu beschädigen. Halten Sie den Schlauch, damit kein Wasser austritt, und halten Sie ihn sofort in das Becken, bevor er sich entleert.
- Beschweren Sie das Ende dieses Schlauches mit einem schweren Gegenstand, der den Liner nicht beschädigen kann, um ihn bis zum Beckenboden absinken zu lassen.
- Schalten Sie das Gerät ein und beginnen Sie mit dem Entleeren des Schwimmbeckens. Vergessen Sie nicht, dass das Becken mit Hilfe des Gerätes nicht vollkommen entleert werden kann. Sobald nur mehr einige Zentimeter Wasser vorhanden sind, und die Pumpe nicht mehr saugt, müssen Sie das Gerät ausschalten.
- Sobald das Gerät zum Entleeren des Schwimmbeckens eingeschaltet wurde, dürfen Sie den Vorgang bis zum Ende nicht mehr unterbrechen, damit sich das Gerät nicht entleert.
- Falls Sie das Becken erneut mit Wasser befüllen, lassen Sie zuerst das restliche Wasser über den Abluss ab, ohne das Schwimmbecken zu beschädigen.

DER SCHLAUCH DARF NICHT AM BODEN DES LINERS WEITERSAUGEN, DA DIE PUMPE DURCH BETRIEB OHNE WASSERZIRKULATION SCHWER BESCHÄDIGT WERDEN ODER DER LINER DURCH DAS SAUGEN SCHADEN ERLEIDEN KÖNNTE.

5.5 Reinigung des Beckenbodens

Zur Reinigung des Schwimmbeckenbodens kann das Gerät mit einem der folgenden Zubehörteile verwendet werden: Bodenreiniger „Riñón“, Bodenreiniger „Oval“ (hier benötigen Sie auch den Schlauch mit ø38 mm und die Stange). Fragen Sie bezüglich Kauf in Ihrem Geschäft oder beim Kundendienst des Schwimmbeckenherstellers nach. Verwenden Sie immer Original-Ersatzteile. Ist der Schlauch länger, als zum Erreichen aller Stellen im Schwimmbecken erforderlich, erschwert das seine Handhabung. Schneiden Sie das überflüssige Schlauchende ab. Achten Sie darauf, dass die Gummienden nicht undicht werden.

Füllen des Schlauches für die Bodenreinigung:

Führen Sie den Bodenreiniger mit dem angeschlossenen Schlauch langsam und senkrecht in das Schwimmbecken ein, wobei sich letzterer langsam mit Wasser füllt. Der Rest des Schlauches bleibt außerhalb

des Wassers. Lassen Sie den Schlauch danach in Längen von jeweils 50 Zentimeter in das Wasser ein, wobei diese, nachdem sie sich mit Wasser aufgefüllt haben, von selbst absinken und im Wasser bleiben sollten. Schließlich muss der ganze Schlauch mit Wasser gefüllt sein und im Wasser bleiben. Wenn der Schlauch nicht vollständig mit Wasser gefüllt ist, kann der Bodenreiniger nicht saugen, was Schäden an der Reinigungsanlage verursachen kann, wenn diese leer läuft.

5.6 Spülung der Modelle AR710 und AR715

Nachdem Sie eine „REINIGUNG“ des Filters durchgeführt haben und das Gerät auf die Position “FILTERUNG” gestellt haben, fließt für einige Sekunden trübes Wasser in das Schwimmbecken. Um zu vermeiden, dass dieses trübe Wasser im Becken zirkuliert, gibt es am Wechselventil die Position „SPÜLUNG“.
Gehen Sie wie folgt vor: Unmittelbar nach der “REINIGUNG” schalten Sie die Pumpe aus, stellen das Ventil auf die Position “SPÜLUNG” (Abb. 7) und schalten die Pumpe eine Minute lang ein. Danach schalten Sie die Pumpe aus und stellen das Ventil auf „FILTERUNG“.

5.7 Umkehrung der Wasserrichtung bei den Modellen AR710 und AR715

In dieser Position des Wechselventils läuft das von der Pumpe kommende Wasser direkt in das Schwimmbecken, ohne vorher durch das Innere des Filters geleitet zu werden (Abb. 7).

5.8 Schließen

Diese Position des Wechselventils, Schließen (CLOSED), wird verwendet, um eine Zirkulation des Wassers durch die Schläuche und den Filter zu vermeiden (Abb. 7).

6 AUSTAUSCHEN DES KABELS

Falls das Stromversorgungskabel beschädigt ist, darf es nur durch den Hersteller oder seinen technischen Kundendienst ausgetauscht werden.

7 WARTUNG

Sobald die Badesaison vorbei ist, muss das Gerät an einem trockenen und wettergeschütztem Ort aufbewahrt werden. Nehmen Sie daher die Schläuche ab, nachdem Sie eine letzte Selbstreinigung durchgeführt haben, um den Quarz-Sand zu reinigen, und leeren Sie das Filterwasser über den Pfropfen zur Entleerung des Auffangs vollkommen aus. Sobald das Wasser vollständig aus dem Gerät entfernt wurde, entfernen Sie vorsichtig alle Rückstände von Quarz-Sand vom Gewinde. Danach bringen Sie den Pfropfen wieder an, damit das Gewinde nicht beschädigt wird.
Der Pfropfen zur Entleerung des Auffangs darf nur für diesen Vorgang verwendet werden.

BESONDERS WICHTIG: Bevor Sie das Gerät nach einer längeren Zeit des Stillstandes wieder in Betrieb nehmen, müssen Sie sicherstellen, dass der Filter ordnungsgemäß gefüllt (d.h. keine Luft im Inneren) ist.

7.1 WARTUNG DER PUMPE

Die Pumpe des Gerätes ist darauf ausgerichtet, mit einem Minimum an Wartungsvorgängen zu funktionieren. Einige Verschleiss- und Abnutzung unterliegende Teile können eine kürzere Lebensauer als die Garantiedauer des Gerätes aufweisen. Für jegliche Art von Wartungsarbeiten kontaktieren Sie bitte den Hersteller des Schwimmbeckens oder dessen technischen Kundendienst.

.

Problemlösung und technischer Kundendienst

Dieses Gerät und seine Anleitungen sind in erster Linie auf den privaten Gebrauch ohne Notwendigkeit professioneller Hilfe, ausgenommen in Sonderfällen, ausgerichtet. Nachfolgend finden Sie Probleme und Ursachen, die im Laufe der Jahre während des Lebenszykluses des Filters auftreten können, und die Sie beheben können. Falls Sie Ihr Problem nicht beheben können, kontaktieren Sie bitte den Hersteller des Schwimmbeckens telefonisch während der in dessen Anleitung angegebenen Zeiten.

MODELLE AR700,AR7050,AR710

PROBLEM	URSACHE	LÖSUNG
Der Filter tropft an den Enden der Schläuche.	Schlechte Verbindung zwischen Eingängen und Schläuchen.	Umwickeln Sie die Muffensitze mit Teflon, und führen Sie die Schlauchenden bis zum Anschlag ein. Danach Klammern festziehen.
Nach Inbetriebnahme des Filters tritt kein Wasser aus der Rücklaufdüse.	Das Ventil befindet sich nicht in der Position Filterung (FILTER).	Das Gerät ausschalten und das Ventil in die richtige Stellung bringen.

PROBLEM	URSACHE	LÖSUNG
	Das Gerät befindet sich höher als der Wasserstand und hat sich daher entleert.	Den Filter in die richtige Position bringen und füllen.
	Der Ansaugdeckel oder der Pfropfen des Skimmers sind angebracht.	Den Ansaugdeckel oder den Pfropfen des Skimmers entfernen.
Unregelmäßiges Arbeiten.	Geringer Wasserstand im Skimmer.	Schwimmbecken und Filter füllen.
	Der Filter ist leer.	Filter füllen.
Der Gerät hat einen geringen Durchfluss.	Durch die Benutzung ist der Filter veschmutzt.	Führen Sie einen automatischen Reinigungsvorgang durch.
	Der Filter ist leer.	Filter füllen.
Aus der Öffnung des Gerätes tritt Wasser aus.	Der Verbindungsbereich zwischen dem Ventil und dem Filter ist verschmutzt.	Die Öffnung von Sand säubern, die Dichtung korrekt auf das Ventil setzen und die Klammer fest anziehen.
	Die Klammer hat sich gelockert.	
Das Ventil des Filters tropft am Ende für den Abwasserausfluss (WASTE).	Defekte Innendichtung auf Grund nicht ordnungsgemäßer Verwendung des chemischen Produktes.	Tauschen Sie den oberen Deckel des Ventils aus.
		Keine chemischen Produkte in den Vorfilterkorb des Skimmers oder den Filter schütten.
	Das Kopfventil ist auf Grund inkorrekter Anwendung defekt (zu stark angezogen).	Das Kopfventil austauschen, nicht zu stark anziehen.
Der Motor springt nicht an. Weder ist ein Geräusch zu hören, noch ein Vibrieren zu spüren.	Keine Stromzufuhr.	Überprüfen, ob Strom in der Leitung ist.

MODELLE AR715

PROBLEM	URSACHE	LÖSUNG
Der Filter tropft an den Enden der Schläuche.	Schlechte Verbindung zwischen Eingängen und Schläuchen.	Umwickeln Sie die Muffensitze mit Teflon, und führen Sie die Schlauchenden bis zum Anschlag ein. Danach Klammern festziehen.
Nach Inbetriebnahme des Filters tritt kein Wasser aus der Rücklaufdüse.	Das Ventil befindet sich nicht in der Position Filterung (FILTER).	Das Gerät ausschalten und das Ventil in die richtige Stellung bringen.
	Das Gerät befindet sich höher als der Wasserstand und hat sich daher entleert.	Den Filter in die richtige Position bringen und füllen.
	Der Ansaugdeckel oder der Pfropfen des Skimmers sind angebracht.	Den Ansaugdeckel oder den Pfropfen des Skimmers entfernen.
Unregelmäßiges Arbeiten.	Geringer Wasserstand im Skimmer.	Schwimmbecken und Filter füllen.
	Der Filter ist leer.	Filter füllen.

PROBLEM	URSACHE	LÖSUNG
Der Gerät hat einen geringen Durchfluss.	Durch die Benutzung ist der Filter veschmutzt.	Führen Sie einen automatischen Reinigungsvorgang durch.
	Der Filter ist leer.	Filter füllen.
Aus der Öffnung des Filters tritt Wasser aus.	Der Verbindungsbereich zwischen dem Ventil und dem Filter ist verschmutzt.	Die Öffnung von Sand säubern, die Dichtung korrekt auf das Ventil setzen und die Klammer fest anziehen.
	Die Klammer hat sich gelockert.	
Das Ventil des Filters tropft am Ende für den Abwasserausfluss (WASTE).	Defekte Innendichtung auf Grund nicht ordnungsgemäßer Verwendung des chemischen Produktes.	Tauschen Sie den oberen Deckel des Ventils aus.
		Keine chemischen Produkte in den Vorfilterkorb des Skimmers oder den Filter schütten.
	Das Kopfventil ist auf Grund inkorrekter Anwendung defekt (zu stark angezogen).	Das Kopfventil austauschen, nicht zu stark anziehen.
Der Motor springt nicht an. Weder ist ein Geräusch zu hören, noch ein Vibrieren zu spüren.	Keine Stromzufuhr.	Überprüfen, ob Strom in der Leitung ist.
Der Motor springt nicht an, aber ein Brummen ist zu hören.	Defekt am Motor.	Kontaktieren Sie den Kundendienst des Schwimmbeckenherstellers.
Austritt von Wasser.	Überprüfen Sie den Grund für das Austreten dees Wassers.	Überprüfen Sie die Schlauchklammern.
		Wenn der Austritt zwischen Pumpe und Motor erfolgt, kontaktieren Sie den Kundendienst des Schwimmbeckenherstellers.

Legga attentamente questo manuale prima di installare il filtro e segua meticolosamente le indicazioni durante l'installazione dello stesso e durante il suo uso.

Conservi questo manuale per future consultazioni in merito al funzionamento di questo apparato.

- In tutto ciò che si riferisce all'installazione elettrica, va seguita la normativa

Direttiva Europea 2006/95/CE di apparati di bassa tensione,
EN 60335-2-41, sicurezza in apparati elettrodomestici e analoghi, requisiti particolari per pompe

Così come tutta la normativa applicabile che faccia riferimento "*alla costruzione di installazioni elettriche in confini speciali. Piscine e fontane*", o analoghe, vigente in ogni zona o paese.

- L'installazione elettrica deve essere eseguita da personale professionale qualificato in installazioni elettriche. Questo apparato non è destinato a persone con capacità fisiche, sensoriali o mentali ridotte o senza esperienza, a meno che non abbiamo ricevuto supervisione o istruzioni in merito al suo uso da un responsabile della sicerezza.
- L'altezza della sabbia non deve superare i 2/3 dell'altezza del deposito.
- Non mantenga l'apparato acceso mentre utilizza la piscina.
- Non faccia funzionare l'attrezzatura se non è spurgato correttamente.
- Non tocchi MAI l'attrezzatura in funzione con il corpo umido o le mani umide.
- Ogni volta che deve manipolare l'attrezzatura o la valvola, la DISCONNETTA dalla presa di corrente.
- Si assicuri che il suolo sia secco prima di toccare l'attrezzatura elettrica.
- Non collochi l'attrezzatura sommersa o dove possa rimanere sommersa.
- Non permetta né ai bambini né agli adulti di appoggiarsi o di sedersi sull'attrezzatura. I bambini devono essere controllati per assicurarsi che non giochino con l'attrezzatura.
- Se il cavo flessibile dell'alimentazione di questo apparato è danneggiato, va sostituito solo dal fabbricante o dai suoi servizi tecnici. In caso di dubbio consulti un servizio tecnico.
- L'attrezzatura va collegata ad una presa di tensione da 230 V di corrente alterna e 50 Hz, con una connessione a terra, protetta con un interruttore differenziali (RCD) con una corrente di funzionamento residuale assegnata che non ecceda i 30 mA.
- È imprescindibile utilizzare un dispositivo di disconnessione multipla con una separazione minima di 3 mm tra i contatti per sconnettere il filtro della alimentazione elettrica.

1 COMPONENTI DELL'IMBALLAGGIO

L'attrezzatura che ha appena comprato è un apparato specialmente concepito e progettato per piscine elevate. Con un disegno innovatore e una grande funzionalità, Lei dispone dei differenti elementi necessari per filtrare l'acqua: Filtro, pompa e valvola selettrice nello stesso apparato. I principali componenti di questa attrezzatura sono:

Modello	***Fig.***	***Pos.***	***Denominazione***
AR700 / AR700C	1	1	Valvola da 5 vie collettore eccentrico
AR700 / AR700C	1	2	Corpo filtro Ø300
AR700 / AR700C	1	3	Base monoblocco Ø300
AR700 / AR700C	1	4	Manichetta di collegamento da Ø38 x 460
AR700 / AR700C	1	5	Copertura motore
AR7050/ AR7050C	1	10	Valvola da 6 vie collettore eccentrico
AR7050/ AR7050C	1	2	Corpo filtro Ø300
AR7050/ AR7050C	1	3	Base monoblocco Ø300
AR7050/ AR7050C	1	4	Manichetta di collegamento da Ø38 x 360

AR7050/ AR7050C	1	6	Pompa
AR7050/ AR7050C	13	1	Staffa
AR7050/ AR7050C	13	2	Dado Ø 2 1/4"
AR7050/ AR7050C	13	3	Collegamento codolo Ø38
AR7050/ AR7050C	13	4	Giuntura torica
AR710 / AR710C	1	7	Base monoblocco Ø380
AR710 / AR710C	1	8	Corpo filtro Ø380
AR710 / AR710C	1	10	Valvola da 6 vie collettore eccentrico
AR710 / AR710C	1	12	Manichetta di collegamento da Ø38 x 580
AR710 / AR710C	1	13	Pompa
AR710 / AR710C	13	1	Staffa
AR710 / AR710C	13	2	Dado Ø 2 1/4"
AR710 / AR710C	13	3	Collegamento codolo Ø38
AR710 / AR710C	13	4	Giuntura torica
AR715 / AR715C	1	7	Base monoblocco Ø380
AR715 / AR715C	1	9	Corpo filtro Ø430
AR715 / AR715C	1	11	Valvola da 6 vie collettore eccentrico
AR715 / AR715C	1	12	Manichetta di collegamento da Ø38 x 580
AR715 / AR715C	1	14	Pompa
AR715 / AR715C	14	1	Staffa
AR715 / AR715C	14	2	Dado Ø 2 1/4"
AR715 / AR715C	14	3	Collegamento codolo Ø38
AR715 / AR715C	14	4	Giuntura torica
Manometro, manichette di collegamento alla piscina, skimmer e silex NON FORNITI nei modelli AR700 / AR7050 / AR710 / AR715			

NECESSITÁ PER UNA CORRETTA INSTALLAZIONE

Per la sua facilità di installazione questa attrezzatura può essere montata da una persona adulta e in un periodo di tempo di circa 2 ore, avendo sempre la precauzione di seguire correttamente le istruzioni dettagliate in questo manuale.

Per una manipolazione corretta dei componenti dell'attrezzatura e per la sua corretta installazione sono necessari i seguenti attrezzi:

Funzione	**Attrezzo**	**Attrezzo alternativo**
Premere le briglie delle manichette	Cacciavite stecker 7 mm	Cacciavite bocca philips
Ritagliare il liner	Cutter (taglierina)	Coltello
Protezione del tubo del collettore	Pezzo di plastica	Pezzo di tela

2PRIMA DI COLLEGARE IL FILTRO

Situazione

Collocare l'attrezzatura su una superficie piana e solida, a una distanza non inferiore di 3,5 metri dalla piscina (secondo le norme di installazione delle apparecchiature elettriche in piscine vigente in ogni zona o paese) e allo stesso livello del fondo della piscina, per evitare che entri aria nel circuito di depurazione e il filtro si disinneschi (fig. 2). È conveniente proteggere l'attrezzatura dal sole e dalla pioggia, e mantenerlo con una ventilazione sufficiente durante il suo funzionamento. Mai tappare l'attrezzatura durante il suo funzionamento.

Nelle attrezzature dove vengono fornite le manichette di collegamento con la piscina, quest'ultime hanno una lunghezza di 4,5 metri. Controllare in ogni caso che tale lunghezza sia sufficiente per poter collocare l'attrezzatura su di una superficie piana e solida, che sia situata ad oltre 3,5 metri dalla piscina. Nel caso in cui la lunghezza delle manichette non fosse sufficiente, si metta in contatto con il servizio tecnico.

Nel caso in cui non vengano fornite le manichette con l'attrezzatura, bisognerà utilizzare delle manichette la cui lunghezza minima sia di 4,5 metri, che permettano all'attrezzatura di filtraggio di funzionare su una superficie piano e solida, posta ad oltre 3,5 metri dalla piscina. Il suddetto servizio di manichette esiste come kit opzionale presso il suo venditore.

Durante il processo di installazione, in caso di dubbio si metta in contatto con il venditore dell'attrezzatura o con un servizio tecnico autorizzato.

Montaggio

Una volta situata l'attrezzatura, procedere come segue:

- Seguire le indicazioni dei fogli forniti insieme all'attrezzatura, nei quali si indicano i passi iniziali per il montaggio dell'attrezzatura stessa.
- Collocare correttamente il collettore interno nel fondo del filtro (fig. 6).
- Tappare la bocca del collettore situato all'interno del filtro con della plastica protettrice per evitare l'ingresso di sabbia (fig. 5).
- Introdurre la sabbia all'interno del filtro:
    - 25 Kg nei modelli AR700 e AR7050.
    - 40 Kg nel modello AR710.
    - 70 Kg nel modello AR715.

La sabbia di silex ha una durata illimitata. Va ricollocata solo in caso di perdita. Prenda nota del livello di sabbia di silex per ricollocarla eventualmente in futuro (fig. 5).

- Eliminare i resti di sabbia dalla bocca del filtro e togliere la plastica protettrice.
- Ricollochi la valvola selettrice TOP con la sua giuntura e collocare la trave o la chiusura.
- Premere con forza la vite della trave che sostiene la valvola al filtro (fig. 4).
- Proceda a collegare i terminali di aspirazione e di impulsione della valvola selettrice, le manichette di aspirazione e di impulsione, fissandole con forza con le staffe (fig. 9 y fig. 12).

NOTA: controlli che le manichette permettano il funzionamento dell'attrezzatura di filtraggio su di una superficie piana e solida, posta ad oltre 3,5 metri dalla piscina (vedi apparato 2.1).

- Proceda a collegare l'altra estremità della manichetta di aspirazione allo skimmer, premendo con forza con una staffa, ripeta l'operazione con il terminale del filtro di ritorno e colleghi la manichetta di impulsione.
- Una volta installato, dovremo effettuare un primo ciclo di lavaggio del filtro, per questo seguiremo quanto descritto nell'apparato 5.3.

3 CONNESSIONE ELETTRICA

In tutto ciò che si riferisce all'installazione elettrica, va seguita la normativa:

Direttiva Europea 2006/95/CE di apparati di bassa tensione,
EN 60335-2-41, sicurezza in apparati elettrodomestici e analoghi, requisiti particolari per pompe

Così come tutta la normativa applicabile che faccia riferimento "*alla costruzione di installazioni elettriche in confini speciali. Piscine e fontane*", o analoghe, vigente in ogni zona o paese.

L'attrezzatura va collegata ad una presa di tensione da 230 V di corrente alterna e 50 Hz, con una connessione a terra, protetta con un interruttore differenziali (RCD) con una corrente di funzionamento residuale assegnata che non ecceda i 30 mA. (Non fornito. Può essere acquistato in uno stabilimento di apparati elettrici)

È imprescindibile utilizzare un dispositivo di disconnessione multipla con una separazione minima di 3 mm tra i contatti per sconnettere il filtro della alimentazione elettrica. (Non fornito. Può essere acquistato in uno stabilimento di apparati elettrici)

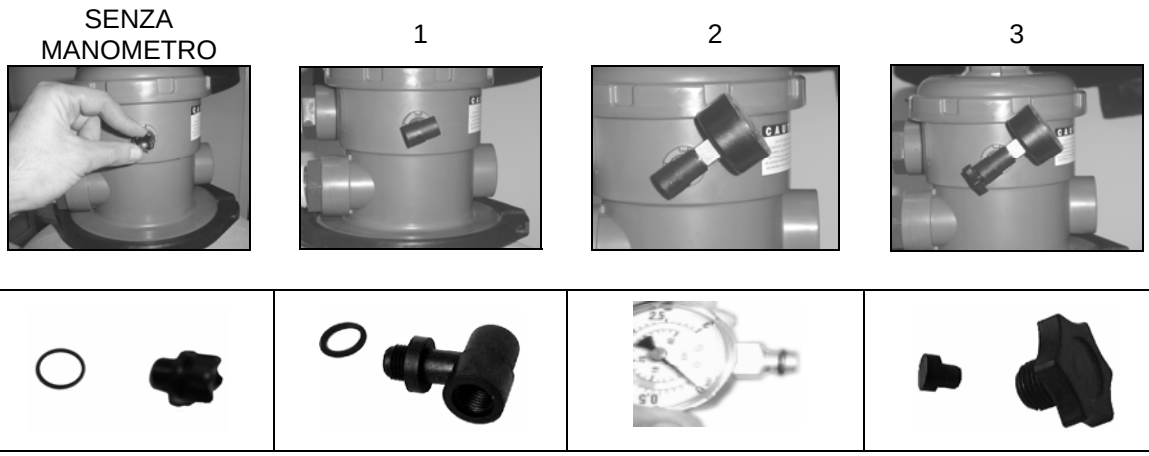
4 VALVOLA SELETTRICE SUPERIORE

La valvola selettrice superiore del filtro è incaricata di selezionare le 5 diverse funzioni del filtro: filtraggio (filter), lavaggio (backwash), risciacquo (rinse),svuotamento (waste) e chiusura (closed) nei modelli AR700.
La valvola selettrice superiore del filtro è incaricata di selezionare le 6 diverse funzioni del filtro: filtraggio (filter), lavaggio (backwash), ricircolo (recirculate), risciacquo (rinse), svuotamento (waste) e chiusura (closed) nei modelli AR710 , AR715.e AR7050

Per cambiare la posizione della valvola, procedere come segue per i modelli AR7050, AR710,AR715 e AR715 : fig. 7

- Scollegare l'attrezzatura dalla presa della corrente.
- Premere con fermezza il comando superiore della valvola togliendo la nervatura anteriore dal suo alloggio, fino a che ci permetta di girare su se stesso.
- Girare soavemente il comando fino ad allineare la nervatura anteriore con l'alloggio della posizione desiderata.
- Lasciare il comando senza asprezza, controllando che la nervatura anteriore sia ben incassata nel suo alloggio.

Montaggio del manometro nei modelli AR700,AR7050,AR710 e AR715



5 FUNZIONAMENTO

Il funzionamento di questa attrezzatura si basa sulla capacità di filtrare la sabbia di silex che c'è al suo interno. L'acqua della piscina riceve l'impulso della pompa del filtro e viene forzata a passare attraverso la sabbia di silex, così che le impurità dell'acqua vengano trattenute dalla sabbia, che attua come elemento filtrante. L'ambiente, gli alberi, il polline, gli insetti e la frequenza dei bagni, sono tra gli altri, i fattori che determinano la sporcizia dell'acqua della piscina. La sabbia di silex del filtro andrà pulita con maggiore o minore frequenza in funzione dei suddetti fattori (si veda l'apparato 5.3).
Per mantenere il buono stato dell'acqua della piscina, dobbiamo inoltre utilizzare i prodotti chimici consigliati dal fabbricante (cloro, antialghe, flocculante, ecc.).

IN NESSUN CASO IL PRODOTTO CHIMICO VA POSTO NEL CESTO O ATTRAVERSO IL FILTRO, QUESTO DETERIOREREBBE O MATERIALI DELL'APPARATO E LIMITEREBBE LA SUA EFFICACIA

5.1 Spurgare il filtro

È imprescindibile che il filtro sia sempre correttamente spurgato. Se il filtro non è spurgato significa che al suo interno si creata una camera d'aria che provoca una circolazione difettosa dell'acqua, un fatto che impedisce il corretto filtraggio della stessa da parte della sabbia di silex e che pregiudica il motore.
Il filtro può non essere spurgato per vari motivi:

- Messa in moto in una nuova attrezzatura.
- Messa in moto di un'attrezzatura dopo un lungo periodo di mancato utilizzo.
- Dopo aver utilizzato un pulisci-fondi di aspirazione.
- Assorbimento di aria da parte dello skimmer, dovuto a un basso livello di acqua nella piscina.
- Per un uso scorretto dell'attrezzatura, del coperchio di aspirazione o del tappo dello skimmer.

Quando il filtro non è spurgato?

Ci accorgeremo che il filtro non è spurgato quando:

- Verificheremo che il rumore dell'acqua che entra in esso suona come una caduta libera, un fatto che ci indica che tra l'ingresso dell'acqua e la sabbia di silex si è creata una camera d'aria.
- Verificheremo che dall'imboccatura di ritorno escono bolle d'aria in eccesso.
- Verificheremo che il pulisci-fondi (non fornito) non aspira, mantenendo pulita la sabbia di silex dopo un lavaggio.

Come spurgare il filtro?

- Verificare che la manichetta di aspirazione sia collegata allo skimmer e al passo aperto (non abbia il tappo).
- Scollegare l'attrezzatura dalla presa di corrente.
- Con la valvola in posizione di filtraggio (filter), allentare leggermente il dado di purga che si trova insieme al manometro perché permetta all'aria accumulata all'interno del filtro di uscire. Se non ha collegato il manometro, collocare la valvola in posizione WASTE.

• Quando si osserva che esce solo acqua (tra 1 e 2 minuti), chiudere nuovamente il dado di purga.
• Collegare il filtro alla presa della corrente e verificare che abbia smesso di sentirsi il rumore della caduta dell'acqua. In caso contrario, ripetere l'operazione.

5.2 Filtraggio

NON MANIPOLARE IN NESSUN CASO LA VALVOLA CON IL MOTORE IN MOTO

Prima del filtraggio iniziale, realizzare un lavaggio della sabbia (apparato 5.3).
La valvola dev'essere in posizione di filtraggio (FILTER). La vita utile del filtro si allunga con periodi di funzionamento continuo non superiori a 4 ore. Le sue necessità di filtraggio giornaliere sono determinate dal volume in m^3 di acqua della sua piscina, in relazione ai m^3/ora di portata del filtro per una temperatura dell'acqua di 21°C approssimativamente e collocato a 3,5 m dalla sua piscina. Lasci almeno 2 ore di riposo al motore tra ogni periodo di funzionamento di 4 ore.

$$\frac{\text{Volume piscina in } m^3}{\text{Portata filtro in } m^3/\text{ora}} = \text{Ore necessarie}$$

Esempio:

$$\frac{42\ m^3}{5{,}5\ m^3/h} = 7{,}63 \text{ ore}$$

2 cicli di 4 ore con un ciclo intermedio di 2 ore di riposo

Nel trattamento iniziale di filtraggio bisogna rispettare i periodi di riposo indicati. Si raccomanda aumentare il tempo di filtraggio quanto maggiore sia la temperatura dell'acqua della sua piscina.

5.3 Lavaggio del filtro

Con il processo di autolavaggio possiamo procedere alla pulizia della sabbia di silex all'interno del filtro, per farlo si inverte il senso di circolazione dell'acqua mediante la valvola selettrice superiore. Questo processo va fatto con regolarità, stando attenti ai diversi fattori che determinano se la sabbia è sporca o meno:

• Se si scopre una diminuzione della portata di ritorno, una volta verificato che la pompa sia ben spurgata.
• Se il manometro (pos. 1 della sezione del monoblocco) ci indica una pressione eccessiva (ago che indica tra giallo e rosso, o sul rosso).

Per il lavaggio della sabbia dovremo procedere come segue nei modelli AR7050,AR700, AR710 e AR715:

• Scollegare l'attrezzatura dalla presa della corrente. Non muovere mai la valvola selettrice con il motore in moto.
• Premere con fermezza il comando superiore della valvola, disincastrando la nervatura anteriore dal suo alloggio che ci permette di farlo girare su se stesso (fig. 7).
• Girare gentilmente il comando fino ad allineare la nervatura anteriore con la posizione dell'operazione di lavaggio (backwash) (fig. 7).
• Collegare la manichetta di ø 38 mm x 1,5 m (nei modelli AR715 tramite il manicotto da 1 ½")all'uscita dello scarico (waste) della valvola e dirigere l'altra estremità della manichetta a uno scarico o a un tombino.
• Mettere in moto il filtro per 2 minuti approssimativamente, fino a che lasci uscire impurità insieme all'acqua,nei medelli AR715 si può osservare tramite lo spioncino trasparente che c'è al lato.
• Spegnere l'attrezzatura.
• Collocare la valvola in posizione di risciacquo (risne) e collegare il filtro per qualche secondo (fig. 7).
• Spegnere l'attrezzatura, passare alla posizione desiderata di filtraggio (filter) (fig. 7) e ritirare la manichetta dalla posizione di scarico (waste) se lo si desidera.(Fig 12)

5.4 Svuotamento della piscina

L'attrezzatura le permette di svuotare <u>quasi totalmente</u> la piscina una volta conclusa la stagione dei bagni. Per fare questo dovrà sistemare la valvola selettrice superiore in posizione di scarico (waste) (fig. 7), senza accendere ancora l'attrezzatura, collegare la manichetta da ø 38 mm x 1,5 m all'uscita dello scarico (waste) della valvola e dirigere l'altra estremità della manichetta a uno scarico o a un tombino a seconda del modello di skimmer e procedere come segue:

Nei modelli con skimmer da parete per Piscine Dream Pool *(*pos. 1, fig. 3) e Piscine Jet Pool *(*pos. 2, fig. 3):

• Spostare il cesto interno dello skimmer e tappare l'aspirazione con il coperchio fornito per tale scopo.

- Scollegare la manichetta di aspirazione dalla presa dello skimmer, allentando la staffa che la sostiene e sostenere la manichetta perché non perda acqua e sommergerla immediatamente nella piscina perché non si scolleghi.
- Zavorrare all'esterno questa manichetta con un oggetto pesante affinché non danneggi il liner, per forzare la sua immersione fino al fondo della piscina.
- Accendere l'attrezzatura e procedere allo svuotamento della piscina. Si ricordi che con l'aiuto dell'attrezzatura non si svuoterà totalmente la piscina, quando resteranno alcuni centimetri di acqua e la pompa non aspiri più, bisognerà spegnerla.
- Una volta accesa l'attrezzatura per svuotare la piscina, non interrompere il processo fino alla fine affinché non si scolleghi.
- Se riempirà nuovamente la piscina di acqua, prima tolga manualmente l'acqua restante senza danneggiare il liner.
- Se smonterà la piscina potrà piegare il liner con l'acqua rimanente nel centro.
- Ritirare la lastra nel modello DREAM POOL o i tubi nel modello JET POOL
- Stendere il liner per svuotarla completamente.
- Questa operazione non va fatta a meno di smontare la piscina.

Nel modello con skimmer autoportante per Piscine Magic Pool: *(*pos. 3, fig. 3)

Oltre allo scarico incorporato nella piscina, si può utilizzare l'attrezzatura per svuotare la piscina:

- Sollevare lo skimmer autoportante fino a che resti pendente per la parte laterale esterna della piscina, per evitare che vi entri acqua.
- Scollegare la manichetta di aspirazione dalla presa dello skimmer dalla parte esterna della parete della piscina, allentando la staffa che la sostiene facendo attenzione, per non danneggiare il liner e sostenendo la manichetta perché non perda acqua e sommergerla immediatamente nella piscina perché non abbia al suo interno aria in eccesso.
- Zavorrare all'esterno questa manichetta con un oggetto pesante affinché non danneggi il liner, per forzare la sua immersione fino al fondo della piscina.
- Accendere l'attrezzatura e procedere allo svuotamento della piscina. Si ricordi che con l'aiuto dell'attrezzatura non si svuoterà totalmente la piscina, quando resteranno alcuni centimetri di acqua e la pompa non aspiri più, bisognerà spegnerla.
- Una volta accesa l'attrezzatura per svuotare la piscina, non interrompere il processo fino alla fine affinché non abbia al suo interno aria in eccesso.
- Se riempirà nuovamente la piscina di acqua, prima tolga attraverso lo scarico l'acqua restante senza danneggiare la piscina.

EVITARE CHE LA MANICHETTA CONTINUI AD ASPIRARE IL FONDO DEL LINER DELLA PISCINA, POTREBBE PREGIUDICARE SERIAMENTE LA POMPA FUNZIONANDO SENZA CIRCOLAZIONE DI ACQUA, O DANNEGGIARE IL LINER A CAUSA DELL'ASPIRAZIONE

5.5 Pulizia del fondo della piscina

Per la pulizia del fondo della piscina può utilizzare l'attrezzatura, con uno dei seguenti accessori:
Pulisci-fondi "Rene", pulisci-fondo "Ovale" (avrà anche bisogno della manichetta da ø38 mm e della pertica). Consulti il suo stabilimento o il Servizio assistenza del fabbricante della piscina per il loro acquisto. Utilizzi sempre ricambi originali.
Una manichetta con una lunghezza maggiore del necessario per raggiungere ogni punto della piscina rende più difficile il suo uso. Tagli la parte della manichetta in eccesso. Controlli che i terminali di gomma non perdano la loro tenuta stagna.

Spurgare la manichetta pulisci-fondi:

Introdurre lentamente all'interno della piscina il pulisci-fondi con la pertica e la manichetta collegata, verticalmente, lasciando che si riempi di acqua, mantenendo il resto della manichetta fuori dall'acqua. Introduca lentamente la manichetta nell'acqua per tratti di 50 cm che devono restare sommersi mano a mano che si riempiono completamente di acqua, fino alla fine, quando tutta la manichetta sarà piena d'acqua e sommersa. Se la manichetta non è completamente spurgata, il pulisci-fondi non aspirerà e potremmo danneggiare il depuratore, facendolo lavorare a vuoto.

5.6 Risciacquo nei modelli AR710 e AR715

Dopo aver realizzato un “LAVAGGIO” del filtro e aver posto l’installazione in posizione di “FILTRAGGIO”, per alcuni secondi l’acqua affluisce alla piscina di color torbido. Per evitare che quest’acqua circoli nella piscina esiste questa opzione della valvola selettrice “RISCIACQUO”.
Operare come segue: Appena dopo il”LAVAGGIO” fermare la pompa, situare la valvola in posizione di “RISCIACQUO” (fig. 7) e collegare la pompa per un minuto, trascorso questo tempo fermare la pompa e situare la valvola in posizione “FILTRAGGIO”.

5.7 Ricircolazione nei modelli AR710 e AR715

In questa posizione la valvola selettrice effettua il passaggio dell’acqua che arriva dalla pompa direttamente alla piscina, senza passare per l’interno del filtro (fig. 7).

5.8 Chiusura

La posizione della valvola selettrice chiusa (CLOSED) si utilizza per evitare la circolazione di acqua attraverso le manichette e il filtro (fig. 7).

6 SOSTITUZIONE DEL CAVO

Se il cavo di alimentazione è danneggiato, dev’essere sostituito solo dal fabbricante o dal suo servizio tecnico.

7 MANUTENZIONE

Una volta conclusa la stagione dei bagni, si dovrà conservare l’attrezzatura in un luogo secco e protetto dalle intemperie. Per questo motivo e dopo aver fatto un autolavaggio finale per lasciare pulita la sabbia di silex, si smonteranno le manichette e si svuoterà totalmente dall’acqua il filtro attraverso il tappo di svuotamento del deposito.
Una volta espulsa tutta l’acqua dall’attrezzatura, pulire con attenzione il filetto dai residui di sabbia di silex prima di rimettere il coperchio, poiché potrebbero rendere inservibile il filetto.
Il tappo di svuotamento del deposito filtro va usato solamente per questa operazione.
MOLTO IMPORTANTE: prima di accendere l’attrezzatura dopo un lungo periodo di inattività, assicurarsi che il filtro sia correttamente spurgato.

7.1 CURA DELLA POMPA

La pompa dell’attrezzatura è preparata per funzionare con una manutenzione minima. Alcuni elementi deperibili o sottomessi a logorio, possono avere una vita utile inferiore al periodo di garanzia dell’attrezzatura.
Per qualsiasi azione di manutenzione contatti il fabbricante della piscina o il suo servizio tecnico.

Soluzione di malfunzionamenti e servizio tecnico

Questa attrezzatura e le sue istruzioni sono progettate particolarmente per un utilizzo familiare, senza la necessità di un intervento professionale, salvo in casi eccezionali. Qui presentiamo i problemi e le cause che possono emergere con il passare degli anni di vita utile del filtro e che Lei stesso può risolvere. Nel caso in cui non possa risolvere il problema, si metta in contatto con il fabbricante della piscina al numero di telefono e negli orari segnalati nelle istruzioni.

MODELLI AR700,AR710,AR7050

PROBLEMA	CAUSA	SOLUZIONE
Il filtro sgocciola per i terminali delle manichette.	Cattivo collegamento dei terminali con le manichette.	Mettere il tèflon negli alloggi, introdurre i terminali delle manichette fino al fondo dell’alloggio e premere le staffe.
Appena accesa l’attrezzatura, non da portata nell’imboccatura di ritorno.	La valvola non è in posizione di filtraggio (filter).	Scollegare l’attrezzatura e situare la valvola nella posizione corretta.
	L’attrezzatura è al di sopra del livello dell’acqua ed ha accumulato aria in eccesso.	Situare l’attrezzatura in una posizione corretta e spurgarla.

PROBLEMA	CAUSA	SOLUZIONE
	Il tappo di aspirazione o il tappo dello skimmer sono posti.	Togliere il tappo di aspirazione o il tappo dello skimmer.
Funzionamento intermittente.	Basso livello di acqua nello skimmer.	Riempire la piscina e spurgare il filtro.
	Il filtro ha accumulato aria in eccesso.	Procedere a spurgare il filtro.
L'attrezzatura ha poca portata.	A causa dell'uso il filtro è sporco.	Effettuare un autolavaggio.
	Il filtro ha accumulato aria in eccesso.	Procedere a spurgare il filtro.
Esce acqua dalla bocca dell'attrezzatura.	La zona di unione tra la valvola e il filtro è sporca.	Pulisca la sabbia dalla bocca, collochi correttamente la giuntura nella valvola e prema con forza sulla staffa.
	La staffa è allentata.	
La valvola del filtro sgocciola dal terminale di scarico (WASTE).	Giuntura inferiore danneggiata dall'uso scorretto del prodotto chimico.	Proceda al cambio del coperchio superiore della valvola.
		Non mettere il prodotto chimico nel cesto prefiltro dello skimmer, né nel filtro.
	Valvola della testina rotta per uso incorretto (pressione eccessiva).	Cambiare la valvola della testina, non premere eccessivamente.
Non si accende il motore. Non fa nessun rumore né vibrazione.	Manca corrente nella linea elettrica.	Verificare che ci sia corrente nella linea elettrica.

MODELLI AR715

PROBLEMA	CAUSA	SOLUZIONE
Il filtro sgocciola per i terminali delle manichette.	Cattivo collegamento dei terminali con le manichette.	Mettere il tèflon negli alloggi con filetto, introdurre i terminali delle manichette fino al fondo dell'alloggio e premere le staffe.
Appena accesa l'attrezzatura, non da portata nell'imboccatura di ritorno.	La valvola non è in posizione di filtraggio (filter).	Scollegare il filtro e situare la valvola nella posizione corretta.
	Il filtro è al di sopra del livello dell'acqua ed ha accumulato aria in eccesso.	Situare il filtro in una posizione corretta e spurgarla.
	Il tappo di aspirazione o il tappo dello skimmer sono posti.	Togliere il tappo di aspirazione o il tappo dello skimmer.
Funzionamento intermittente.	Basso livello di acqua nello skimmer.	Riempire la piscina e spurgare il filtro.
	Il filtro ha accumulato aria in eccesso.	Procedere a spurgare il filtro.
L'attrezzatura ha poca portata.	A causa dell'uso il filtro è sporco.	Effettuare un autolavaggio.
	Il filtro ha accumulato aria in eccesso.	Procedere a spurgare il filtro.
Esce acqua dalla bocca del filtro.	La zona di unione tra la valvola e il filtro è sporca.	Pulisca la sabbia dalla bocca, collochi correttamente la giuntura nella valvola e prema

PROBLEMA	CAUSA	SOLUZIONE
	La staffa è allentata.	con forza sulla staffa.
La valvola del filtro sgocciola dal terminale di scarico (WASTE).	Giuntura inferiore danneggiata dall'uso scorretto del prodotto chimico.	Proceda al cambio del coperchio superiore della valvola.
		Non mettere il prodotto chimico nel cesto prefiltro dello skimmer, né nel filtro.
	Valvola della testina rotta per uso incorretto (pressione eccessiva).	Cambiare la valvola della testina, non premere eccessivamente.
Non si accende il motore. Non fa nessun rumore né vibrazione.	Manca corrente nella linea elettrica.	Verificare che ci sia corrente nella linea elettrica.
Non si accende il motore ma si sente un ronzio.	Guasto nel motore.	Si metta in contatto con il servizio di assistenza del fabbricante della piscina
Perdita d'acqua.	Analizzi la causa della perdita d'acqua.	Controlli le staffe delle manichette.
		Se perde tra la pompa e il motore, si metta in contatto con il servizio assistenza del fabbricante della piscina.

Lees deze handleiding alvorens de filter te installeren en volg de instructies zorgvuldig op tijdens de installatie en het gebruik.

Bewaar deze handleiding als verdere referentie omtrent de werking van dit toestel.

- De elektrische installatie dient te voldoen aan onderstaande richtlijnen

De Europese richtlijn 2006/95/EEG voor laagspanningstoestellen.
De norm EN 60335-2-41, veiligheid van huishoudelijke en soortgelijke toestellen, bijzondere voorschriften voor pompen.

Alsook iedere andere toepasbare richtlijn omtrent "*de aanleg van elektrische installaties in bijzondere situaties, bij zwembaden of fonteinen"*, of soortgelijke van kracht in de regio of het land.

- De elektrische installatie dient te worden uitgevoerd door een bevoegd vakman in elektrische installaties. Dit toestel is niet bestemd voor personen met een fysieke, zintuiglijke of mentale invaliditeit of zonder ervaring tenzij er controle is of gebruiksinstructies werden opgegeven door een veiligheidsdeskundige.
- Het zand mag niet hoger reiken dan 2/3 van de hoogte van het reservoir.
- Stel het toestel niet in werking wanneer gebruik wordt gemaakt van het zwembad.
- Schakel het toestel uit wanneer het niet correct is ontlucht.
- Raak het toestel in werking NOOIT aan met een nat lichaam of vochtige handen.
- VERBREEK steeds de verbinding met de stroom bij werken aan het toestel of de klep.
- Controleer of de grond droog is alvorens het toestel aan te raken.
- Plaats het toestel nooit ondergedompeld of waar het ondergedompeld kan raken.
- Laat kinderen of volwassenen niet steunen of plaatsnemen op het toestel. Kinderen moeten steeds vergezeld zijn van een volwassene om er zeker van te zijn dat zij niet met het toestel spelen.
- Indien het flexible voedingssnoer van het toestel is beschadigd, mag dit enkel worden vervangen door de fabrikant of de technische dienst. Raadpleeg bij twijfel de technische dienst.
- Het toestel moet worden aangesloten op een geaard netwerk met een wisselstroomspanning van 230 V en 50 Hz, en moet beschermd zijn door een differentieelschakelaar (RCD) met een residule differentieelstroom van niet meer dan 30 mA.
- Het is beslist noodzakelijk om een meerpolige schakelaar te gebruiken met een afstand van minstens 3 mm tussen de contacten om de filter los te koppelen van de elektrische voeding.

1 COMPONENTEN VERPAKKING

Het toestel dat u zopas heeft aangekocht werd speciaal bedacht en ontworpen voor opstaande zwembaden. Dit toestel met een vernieuwend ontwerp en tal van mogelijkheden biedt de verschillende functies aan die noodzakelijk zijn voor het zuiveren van het water: een filter, pomp en wisselklep in één toestel. De voornaamste componenten zijn:

Model	***Fig.***	***Pos.***	***Omschrijving***
AR700 / AR700C	1	1	5-standenklep, excentriek reservoir
AR700 / AR700C	1	2	Filterkast Ø300
AR700 / AR700C	1	3	Onderstel monobloc Ø300
AR700 / AR700C	1	4	Verbindingsslang Ø38 x 460
AR700 / AR700C	1	5	Motorkap
AR7050/ AR7050C	1	10	6-standenklep, excentriek reservoir
AR7050/ AR7050C	1	2	Filterkast Ø300
AR7050/ AR7050C	1	3	Onderstel monobloc Ø300
AR7050/ AR7050C	1	4	Verbindingsslang Ø38 x 360
AR7050/ AR7050C	1	6	Pomp

AR7050/ AR7050C	13	1	Klem
AR7050/ AR7050C	13	2	Moer Ø 2 1/4"
AR7050/ AR7050C	13	3	Penverbinding Ø38
AR7050/ AR7050C	13	4	O-ring
AR710 / AR710C	1	7	Onderstel monobloc Ø380
AR710 / AR710C	1	8	Filterkast Ø380
AR710 / AR710C	1	10	6-standenklep, excentriek reservoir
AR710 / AR710C	1	12	Verbindingsslang Ø38 x 580
AR710 / AR710C	1	13	Pomp
AR710 / AR710C	13	1	Klem
AR710 / AR710C	13	2	Moer Ø 2 1/4"
AR710 / AR710C	13	3	Penverbinding Ø38
AR710 / AR710C	13	4	O-ring
AR715 / AR715C	1	7	Onderstel monobloc Ø380
AR715 / AR715C	1	9	Filterkast Ø430
AR715 / AR715C	1	11	6-standenklep, centraal reservoir
AR715 / AR715C	1	12	Verbindingsslang Ø38 x 580
AR715 / AR715C	1	14	Pomp
AR715 / AR715C	14	1	Klem
AR715 / AR715C	14	2	Moer Ø 2 1/4"
AR715 / AR715C	14	3	Penverbinding Ø38
AR715 / AR715C	14	4	O-ring
Manometer, slangen voor verbinding zwembad, skimmer en silex NIET BIJGELEVERD bij de modellen AR700 / AR7050 / AR710 / AR715			

VOORSCHRIFTEN VOOR EEN CORRECTE INSTALLATIE

Dankzij een eenvoudige montage kan dit toestel in ongeveer twee uur door een volwassen persoon worden gemonteerd. Let er evenwel op dat de instructies van deze gebruiksaanwijzing steeds nauwkeurig worden opgevolgd.
Om de onderdelen van het toestel correct te hanteren en een juiste installatie te waarborgen, is onderstaand gereedschap aanbevolen:

Functie	**Gereedschap**	**Alternatief gereedschap**
De klemmen van de slangen aanspannen	Schroevendraaier stecker 7 mm	Schroevendraaier mondstuk Philips
Snijden in de bekleding	Cutter	mesje
Bescherming buis verzamelvat	Een stuk plastic	Een stuk stof

2 ALVORENS DE FILTER AAN TE SLUITEN

Plaats

Plaats het toestel op een vlakke en stevige ondergrond op minimaal 3,5 m van het zwembad (conform de installatienorm voor elektrische toestellen bij zwembaden van kracht in de regio of het land) en op gelijke hoogte met de bodem van het zwembad om te voorkomen dat er lucht in de filter binnendringt (fig. 2). Het is aanbevolen het toestel afgeschermd te houden van de zon en de regen en voldoende ventilatieruimte vrij te laten wanneer het toestel is ingeschakeld. Dek het toestel nooit af wanneer het in werking is.

Bepaalde toestellen worden geleverd met een verbindingsslang van 4,5 m. Controleer steeds of deze lengte voldoende is om het toestel op een vlak en stevig oppervlak te plaatsen op minstens 3,5 m van het zwembad. Neem contact op met de technische dienst wanneer de slangen niet lang genoeg zijn.
Indien het toestel zonder slangen wordt geleverd, moeten slangen worden gebruikt die minstens 4,5 m lang zijn en die het mogelijk maken de filteruitrusting op een vlak en stevig oppervlak te plaatsen op minstens 3,5 m van het zwembad. Deze slangen kunnen worden verkregen als optioneel pakket bij uw vekooppunt.

Neem, bij twijfels omtrent de installatie, contact op met uw verkooppunt of een erkende technische dienst.

Montage

Volg, eenmaal het toestel is geplaatst, onderstaande aanwijzingen op:

- Volg de montage-instructies van de bijgeleverde handleiding op.

• Bevestig het binnenste reservoir op de bodem van de filter (fig. 6).
• Dek het mondstuk van het reservoir in de filter af met een beschermend plastic om te voorkomen dat er zand binnendringt (fig. 5).
• Breng het zand in de filter:
    • 25 kg voor model AR700 en AR7050.
    • 40 kg voor model AR710
    • 70 kg voor model AR715.

Silex-zand heeft een onbeperkte levensduur en dient enkel te worden aangevuld bij zandverlies. Markeer het peil van het silex-zand als verder referentiepunt (fig. 5).
• Verwijder de zandresten rond het mondstuk van de filter en neem het plastic beschermlaagje weg.
• Plaats de TOP-wisselklep terug met de pakking en breng de klemband of de sluiting terug aan.
• Draai de schroef van de klemband die de klep aan de filter bevestigt goed vast (fig. 4).
• Sluit de aanzuig- en aandrijfslangen aan op de aanzuig-en aandrijfuiteindes van de wisselklep en maak deze goed vast met de klemmen (fig. 9 en fig. 12).
OPMERKING: Controleer met de slangen of het mogelijk is de filteruitrusting op een vlak en stevig oppervlak te installeren op minstens 3,5 m van het zwembad (zie hoofdstuk 2.1.).

• Sluit het andere uiteinde van de aanzuigslang aan op de skimmer en span goed aan met de klem. Sluit het andere uiteinde van de aandrijfslang aan op het mondstuk van de retourleiding.
• Eens het toestel is gemonteerd, moet de filter voor de eerste maal worden gewassen. Volg hiervoor de instructies van hoofdstuk 5.3 op.

3 ELEKTRISCHE AANSLUITING

De elektrische aansluiting dient te voldoen aan onderstaande richtlijnen:

De Europese Richtlijn 2006/95/EEG voor laagspanningstoestellen.
De norm EN 60335-2-41, veiligheid van huishoudelijke en soortgelijke toestellen, bijzondere voorschriften voor pompen.

Alsook iedere andere toepasbare richtlijn omtrent "*de aanleg van elektrische installaties in bijzondere situaties, bij zwembaden en fonteinen"*, of soortgelijke van kracht in de regio of het land.

Het toestel dient te worden aangesloten op een geaard netwerk met een wisselstroomspanning van 230 V en 50 Hz en moet worden beschermd door een differentieelschakelaar (RCD) met een residuele differentieelstroom die niet hoger is dan 30 mA (niet bijgeleverd, verkrijgbaar in de speciaalzaak).

Het is beslist noodzakelijk om een meerpolige schakelaar te gebruiken met een afstand van minstens 3 mm tussen de contacten zodat het toestel niet onder spanning staat wanneer het niet in gebruik is (niet bijgeleverd, verkrijgbaar in de speciaalzaak).

4 BOVENSTE WISSELKLEP

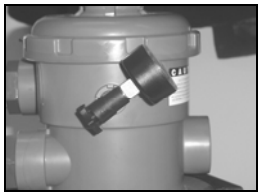
Bij het model AR700 bedient de bovenste wisselklep de 5 verschillende functies van de filter: zuiveren (filter), reinigen (backwash), spoelen (rinse), ledigen (waste) en sluiten (closed).
Bij het model AR710 en AR715 bedient de bovenste wisselklep de zes verschillende functies van de filter: zuiveren (filter), reinigen (backwash), recirculeren (recirculate), spoelen (rinse), ledigen (waste) en sluiten (closed).

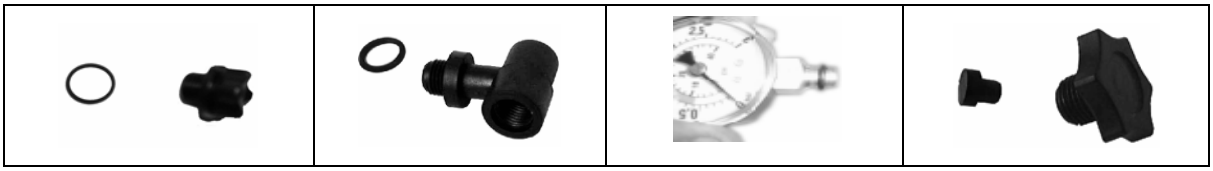
<u>De stand van de klep wijzigen bij de modellen AR700,AR7050, AR710 en AR715:</u> fig. 7

• Verbreek de verbinding met de stroom.
• Druk stevig op de bovenste knop van de klep zodat het lipje vooraan uit de behuizing komt en de klep kan ronddraaien.
• Draai de knop lichtjes totdat het lipje vooraan op één lijn komt met de behuizing van de gewenste functie.
• Laat de knop zachtjes los en controleer of het lipje vooraan goed in de behuizing vastzit.

Montage van de manometer bij de modellen AR700,AR7050, AR710 en AR715

ZONDER MANOMETER 1 2 3





5 WERKING

De werking van dit toestel berust op de filtercapaciteit van het silex binnenin de filter. Het zwembadwater wordt aangezogen door de filterpomp en sijpelt door het silex-zand. Het zand werkt als een filter en de onzuiverheden blijven achter in het zand. De omgeving, de bomen, het pollen, de insecten en de frequentie van het zwembadgebruik bepalen o.a. de properheid van het zwembadwater. Deze factoren bepalen hoe vaak het silex-zand moet worden gereinigd (zie hoofdstuk 5.3).
Gebruik voor een goede waterkwaliteit de chemische producten aanbevolen door de fabrikant (chloor, anti-algen, vlokmiddel, enz.).

HET CHEMISCHE MIDDEL MAG IN GEEN GEVAL IN DE KORF OF VIA DE FILTER WORDEN TOEGEVOEGD. DIT TAST HET MATERIAAL VAN HET TOESTEL AAN EN VERMINDERT DE EFFICIENTIE

5.1 Filter ontluchten

Het is belangrijk dat de filter steeds op correcte wijze is ontlucht. Een niet-onluchte filter heeft binnenin een luchtkamer die een slechte circulatie van het water tot gevolg heeft waardoor het water niet correct wordt gezuiverd en de motor wordt beschadigd.
Er kan om verschillende redenen lucht in de filter zitten:
- inbedrijfstelling van een nieuw toestel;
- Inbedrijfstelling van een toestel dat gedurende een langere periode niet werd gebruikt;
- na het gebruik van een bodemzuiger;
- luchtabsorptie door de skimmer als gevolg van een laag waterpeil in het zwembad;
- na een onjuist gebruik van het toestel, zuigdop of skimmerdop.

Wanneer zit er lucht in de filter?

Er zit lucht in de filter wanneer we:
- het water in de filter horen vallen wat erop wijst dat er een luchtkamer werd gevormd tussen de wateraanvoer en het silex-zand;
- vaststellen dat de lucht via luchtbelletjes ontsnapt uit het mondstuk van de retourleiding;
- vaststellen dat de bodemzuiger (niet bijgeleverd) niet zuigt, terwijl het silex-zand na de reiniging proper is.

Hoe wordt de filter ontlucht?

- Controleer of de aanzuigslang op de skimmer is aangesloten en de doorgang is geopend (de dop zit er niet op);
- Verbreek de verbinding met de stroom;
- Plaats de klep in de stand zuiveren (filter), draai de ontluchtingsmoer bij de manometer langzaam open zodat de lucht uit de filter kan ontsnappen. Indien er geen manometer is geïnstalleerd, plaats dan de klep in de stand WASTE.
- Draai de ontluchtingsmoer opnieuw dicht van zodra er enkel nog water naar buiten stroomt (na 1 tot 2 minuten).
- Sluit de filter aan op de stroomtoevoer en controleer of het geluid van het vrij vallend water verdwenen is. Is dit niet het geval, herhaal dan deze handelingen.

5.2 Zuiveren

WERK NOOIT AAN DE KLEP WANNEER DE MOTOR IN WERKING IS

Reinig het zand alvorens te zuiveren (hoofdstuk 5.3).
Plaats de klep in de stand zuiveren (FILTER). Gebruik de filter niet langer dan 4 uur voor een optimale levensduur. De filterduur wordt bepaald door de verhouding tussen het volume van het zwembadwater (in m^3) en het debiet van de filter (m^3/h) bij een watertemperatuur van ongeveer 21ºC en op 3,5 m van het zwembad. Laat de motor na een werkingsduur van 4 uur minstens 2 uur rusten.

$$\frac{\text{Volume zwembad in } m^3}{\text{Debiet filter in } m^3/h} = \text{nodige uren}$$

Voorbeeld:

$$\frac{42\ m^3}{5{,}5\ m^3/h} = 7{,}63 \text{ uren}$$

2 cyclussen van 4 uur met een rustperiode van 2 uur.

In het begin dienen de opgegeven rustperiodes te worden nageleefd. Het is aanbevolen de filterduur op te drijven bij een hogere temperatuur van het zwembadwater.

5.3 Filter reinigen

Via de functie automatisch reinigen wordt het silex-zand binnenin de filter gereinigd. Hiertoe dient de richting van de watercirculatie via de bovenste wisselklep te worden gewijzigd. Herhaal dit procédé geregeld en let op de verschillende factoren die aangeven wanneer het zand vuil is:

- bij een vermindering van het debiet in de retourleiding, nadat werd gecontroleerd of de pomp goed ontlucht is.
- wanneer de manometer (pos. 1 op de monoblock) een te hoge druk aangeeft (wijzer tussen geel en rood of in het rode gebied).

Volg onderstaande stappen op om de filter te reinigen (model AR7050, AR710 en AR715,AR700):

- Verbreek de verbinding met de stroom. Beweeg de wisselklep nooit wanneer de motor draait.
- Druk op de bovenste knop van de klep zodat het voorste lipje uit de behuizing komt en de klep kan draaien (fig. 7).
- Draai de knop langzaam zodat het voorste lipje op één lijn valt met de wasfunctie (backwash) (fig. 7).
- Sluit een slang met ø 38 mm x 1,5 m (model AR715via het koppelstuk van 1 ½ ")aan op de waterafvoer (waste) van de klep en breng het andere uiteinde van de slang naar een afvoer of riolering. Fig.12
- Laat de filter ongeveer 2 min werken totdat er geen onzuiverheden meer meevloeien met het water.model AR715 Kijk hiervoor door het kijkvenster aan de zijkant.
- Schakel het toestel uit.
- Plaats de klep in de stand spoelen (rinse) en laat de filter enkele seconden werken (fig. 7).
- Schakel het toestel uit, kies de gewenste functie van de filter (filter) (fig. 7) en verwijder eventueel de slang van de waterafvoer (waste).Fig.12

5.4 Het zwembad ledigen

Dit toestel maakt het mogelijk het zwembad aan het einde van het seizoen bijna volledig leeg te laten lopen. Plaats hiervoor de bovenste wisselklep in de stand waterafvoer (waste) (fig. 7) en sluit, alvorens het toestel in werking te stellen, een slang met ø 38 mm x 1,5 m (model AR715via het koppelstuk van 1 ½ " aan op de waterafvoer (waste) van de klep en breng het andere uiteinde van de slang naar een waterafvoer of riolering. Ga, naargelang het model van de skimmer, als volgt te werk:

Model met wandskimmer voor Dream Pool zwembaden *(*pos. 1, fig. 3) en Jet Pool zwembaden *(*pos. 2, fig. 3):

- Verwijder de binnenkorf uit de skimmer en sluit de aanzuig af met de daartoe bijgeleverde dop.
- Koppel de aanzuigslang los van de skimmer door de slangklem te lossen, hou de slang vast zodat het water niet kan wegvloeien en dompel deze onmiddellijk onder in het zwembad zodat er geen lucht binnenkomt.
- Belast het uiteinde van de slang met een zwaar voorwep dat het zwembad niet beschadigt, zodat de slang naar de bodem van het zwembad zinkt.
- Schakel de pomp in en laat het zwembad leeglopen. Denk eraan dat de filter het zwembad niet volledig ledigt. Wanneer er nog maar enkele cm rest, zuigt de pomp niet meer en dient deze te worden uitgeschakeld.
- Eenmaal het toestel het zwembad ledigt, mag het proces niet worden onderbroken om te voorkomen dat er lucht binnendringt.
- Indien het zwembad opnieuw wordt gevuld, verwijder dan eerst handmatig de rest van het water zonder het zwembaddoek te beschadigen.
- Indien het zwembad wordt gedemonteerd, kan het zwembaddoek worden opgevouwen met het resterende water.
- Verwijder de panelen bij het model DREAM POOL of de buizen bij het model JET POOL.

- Ontvouw het zwembaddoek om het resterende water te laten wegvloeien.
- Voer deze handelingen enkel uit om het zwembad te demonteren.

Model met zelfdragende skimmer voor Magic Pool zwembaden: *(*pos. 3, fig. 3)

Naast de waterafvoer waarmee het zwembad is uitgerust, kan het zwembad ook worden geledigd via het toestel:

- Til de zelfdragende skimmer op tot deze aan de buitenzijde van het zwembad hangt om te vermijden dat er water binnendringt.
- Koppel de aanzuigslang los van de skimmer via de buitenzijde van de zwembadwand door de slangklem voorzichtig los te draaien zonder hierbij het zwembaddoek te beschadigen. Hou de slang zo vast dat er geen water wegstroomt en dompel deze onmiddellijk onder in het zwembad zodat er geen lucht binnendringt.
- Belast het uiteinde van de slang met een zwaar voorwep dat het zwembad niet beschadigt, zodat de slang naar de bodem van het zwembad zinkt.
- Schakel de pomp in en laat het zwembad leeglopen. Denk eraan dat de filter het zwembad niet volledig ledigt. Wanneer er nog maar enkele cm rest, zuigt de pomp niet meer en dient deze te worden uitgeschakeld.
- Eenmaal het toestel het zwembad ledigt, mag het proces niet worden onderbroken om te voorkomen dat er lucht binnendringt.
- Indien het zwembad opnieuw wordt gevuld, verwijder dan eerst via de waterafvoer het resterende water zonder hierbij het zwembaddoek te beschadigen.

VERMIJD DAT DE SLANG ZICH VASTZUIGT OP DE BODEM VAN HET ZWEMBAD. INDIEN DE POMP DRAAIT ZONDER DAT HET WATER CIRCULEERT, KAN DIT ERNSTIGE SCHADE VEROORZAKEN AAN DE POMP OF AAN HET ZWEMBAD

5.5 De bodem van het zwembad reinigen

De bodem van het zwembad kan worden gereinigd met het toestel en met behulp van onderstaande toebehoren: Bodemreiniger ‘Riñón’, Bodemreiniger ‘Oval’ (ook de slang met ø38 mm en de stok). Raadpleeg hiervoor uw verkooppunt of de dienst Naverkoop van de zwembadfabrikant. Gebruik steeds originele wisselstukken. Een te lange slang bemoeilijkt het gebruik. Snijd de slang af op de gewenste lengte. Let erop dat de aansluitingen in rubber niet gaan lekken.

De slang van de bodemreiniger ontluchten:

Breng de bodemreiniger voorzichtig verticaal in het zwembad met de stok en slang, laat het toestel vollopen met water en hou de rest van de slang uit het water. Breng nadien de slang langzaam in het water (per stukken van 50 cm), dompel deze onmiddellijk onder en laat de slang vollopen met water tot deze volledig is ondergedompeld en met water is gevuld. Indien er lucht in de slang is, zal de bodemreiniger niet zuigen en kan de filter worden beschadigd.

5.6 Spoelen bij het model AR710 en AR715

Nadat de filter werd gereinigd en het toestel opnieuw wordt ingesteld op “ZUIVEREN”, vloeit gedurende enkele seconden troebel water in het zwembad. Stel de wisselklep in op de stand “SPOELEN” om dit te voorkomen. Handel hierbij als volgt: Schakel onmiddellijk na het “ZUIVEREN” de pomp uit, stel de klep in op de stand “SPOELEN” (fig. 7) en schakel de pomp gedurende 1 minuut in. Schakel de pomp daarna opnieuw uit en plaats de klep op de stand “ZUIVEREN”.

5.7 Recirculatie bij het model AR710 en AR715

Wanneer de wisselklep op deze stand is ingesteld, vloeit het water van de pomp rechtstreeks terug naar het zwembad zonder dat het door het binnenste van de filter vloeit (fig. 7).

5.8 Sluitstand

De sluitstand van de klep wordt gebruikt om te voorkomen (CLOSED) dat het water door de slangen en de filter circuleert (fig. 7).

6 HET SNOER VERVANGEN

Een beschadigd snoer mag enkel worden vervangen door de fabrikant of technische dienst.

7 ONDERHOUD

Bewaar het toestel aan het einde van het seizoen op een droge plaats beschut tegen de weersomstandigheden.

Hiervoor dient het silex-zand een laatste maal automatisch gereinigd te worden, dienen de slangen te worden losgemaakt en moet al het water uit de filter worden verwijderd via de ledigingsdop van het reservoir.
Maak, eens al het water uit de filter is verwijderd, de schroefring schoon alvorens de dop terug te plaatsen om te voorkomen dat de schroefdop wordt beschadigd.
De ledigingsdop van de filter mag enkel voor deze toepassing worden gebruikt.
ZEER BELANGRIJK: Controleer of de filter goed is ontlucht alvorens het toestel na een lange periode opnieuw in werking te stellen.

7.1 ONDERHOUD VAN DE POMP

De filterpomp is in principe onderhoudsvrij. Bepaalde vervangbare en aan slijtage onderhevige onderdelen kunnen een kortere levensduur hebben dan de garantieperiode van het toestel.
Neem voor hulp bij het onderhoud contact op met de fabrikant of technische dienst.

Oplossen van storingen en technische dienst

Dit toestel en de aanwijzingen zijn speciaal ontworpen voor een huishoudelijk gebruik zodat dat de tussenkomst van een vakman enkel noodzakelijk is in uitzonderlijke gevallen. Hierna geven wij een overzicht van de problemen en de oorzaken die na verloop van tijd kunnen optreden en hoe deze verholpen kunnen worden. Indien een probleem niet verholpen kan worden, gelieve telefonisch contact op te nemen met de fabrikant van het zwembad tijdens de kantooruren vermeld in deze gebruiksaanwijzing.

MODEL AR710 EN AR7050 AR700

PROBLEEM	OORZAAK	OPLOSSING
De filter lekt bij de aansluiting van de slangen.	De slangen zijn niet goed aangesloten.	Breng teflon aan bij de behuizing, plaats de uiteindes van de slangen tot achter in de behuizing en span de klemmen aan.
Na het inschakelen van de filter is er geen doorstroming bij de retourleiding van de filter.	De klep staat niet in de stand zuiveren (filter).	Schakel de filter uit en plaats de klep op de juiste stand.
	Het toestel bevindt zich boven het waterpeil en bevat lucht.	Plaats het toestel op een correcte hoogte en ontlucht de filter.
	De aanzuigdop of skimmerdop werd niet geopend.	Open de aanzuigdop of skimmerdop.
Haperende werking.	Laag waterpeil in de skimmer.	Laat het zwembad vollopen en ontlucht de filter.
	Er zit lucht in de filter.	Ontlucht de filter.
Lage doorstroom.	De filter is vuil door het gebruik.	Laat de filter automatisch reinigen.
	Er zit lucht in de filter.	Ontlucht de filter.
Er komt water uit het mondstuk van de filter.	De verbinding tussen de klep en de filter is vuil.	Maak het mondstuk schoon, plaats de pakking correct op de klep en span de klem strak aan.
	De klem zit los.	
De klep van de filter lekt bij de waterafvoer (WASTE).	De inwendige pakking is beschadigd door onjuist gebruik van een chemisch product.	Vervang het bovenste deksel van de klep.
		Breng geen chemisch product aan in de korf van de voorfilter van de skimmer noch in de filter zelf.
	De kop van de klep is defect door onjuist gebruik (te strak aangespannen).	Vervang de kop van de klep en span deze niet te strak aan.

PROBLEEM	OORZAAK	OPLOSSING
De motor start niet. Hij maakt geen geluid en trilt niet.	Er is geen elektrische stroom.	Controleer de elektrische stroom.

MODELLEN AR715

PROBLEEM	OORZAAK	OPLOSSING
De filter lekt bij de aansluiting van de slangen.	De slangen zijn niet goed aangesloten.	Breng teflon aan bij de schroefringen, plaats de uiteindes van de slangen tot achter in de behuizing en span de klemmen aan.
Na het inschakelen van de filter is er geen doorstroming bij de retourleiding van de filter.	De klep staat niet in de stand ZUIVEREN (filter).	Schakel de filter uit en plaats de klep in de juiste stand.
	De filter bevindt zich boven het waterpeil en bevat lucht.	Plaats het toestel op een correcte hoogte en ontlucht de filter.
	De aanzuigdop of de skimmerdop zijn niet geopend.	Open de aanzuigdop of skimmerdop.
Haperende werking.	Laag waterpeil in de skimmer.	Laat het zwembad vollopen en ontlucht de filter.
	Er zit lucht in de filter.	Ontlucht de filter.
Lage doorstroom.	De filter is vuil door het gebruik.	Laat de filter automatisch reinigen.
	Er zit lucht in de filter.	Ontlucht de filter.
Er komt water uit het mondstuk van de filter.	De verbinding tussen de klep en de filter is vuil.	Maak het mondstuk schoon, plaats de pakking correct op de klem en span de klem strak aan.
	De klem zit los.	
De klep van de filter lekt bij de waterafvoer (WASTE).	De inwendige pakking is beschadigd door onjuist gebruik van een chemische product.	Vervang het bovenste deksel van de klep.
		Breng geen chemisch product aan in de korf van de voorfilter noch in de filter.
	De kop van de klep is defect door onjuist gebruik (te strak aangespannen).	Vervang de kop van de klep en span deze niet te strak aan.
De motor start niet. Hij maakt geen geluid en trilt niet.	Er is geen elektrische stroom.	Controleer of er elektrische stroom is.
De motor start niet maar maakt wel een zoem-geluid.	Motordefect.	Neem contact op met de dienst naverkoop van de zwembadfabrikant.
Waterverlies	Ga de oorzaak van het waterverlies na.	Controleer de klemmen van de slangen.
		Neem, bij een waterverlies tussen de motor en de pomp, contact op met de dienst naverkoop van de zwembadfabrikant.

Leia com atenção este manual antes de instalar o filtro e siga rigorosamente as indicações durante a instalação e respectivo uso.

Guarde este manual para futuras consultas sobre o funcionamento deste aparelho.

- No que se refere à instalação eléctrica, dever-se-á seguir a norma

Directiva Europeia 206/95/CE de aparelhos de baixa tensão.
EN 60335-2-41, segurança em aparelhos electrodomésticos e análogos, requisitos particulares para bombas

Assim como as normas aplicáveis relativas "*à construção de instalações eléctricas em locais especiais. Piscinas e fontes"* ou a normas análogas, vigentes em cada região ou país.

- A instalação eléctrica deve ser realizada por profissionais qualificados em instalações eléctricas. Este aparelho não se destina a pessoas com capacidades físicas, sensoriais ou mentais reduzidas ou sem experiência, salvo se tiverem tido supervisão ou instruções acerca da sua utilização por um responsável de segurança.
- A altura da areia não deve ultrapassar os 2/3 da altura do depósito.
- Não deixe o aparelho ligado quando estiver a utilizar a piscina.
- Não faça o aparelho funcionar sem estar correctamente purgado.
- NUNCA toque no aparelho em funcionamento com o corpo ou com as mãos húmidas.
- Quando tiver de manipular o aparelho ou a válvula, DESLIGUE-O da tomada.
- Assegure-se de que o chão está seco, antes de tocar no equipamento eléctrico.
- Não deixe o aparelho mergulhado ou onde possa ficar mergulhado.
- Não permita que crianças ou adultos se apoiem ou sentem no aparelho. As crianças devem ser mantidas sob vigilância.
- Se o cabo flexível de alimentação deste aparelho estiver danificado, deverá ser substituído apenas pelo fabricante ou pelos seus serviços técnicos. Em caso de dúvida consulte o serviço técnico.
- O aparelho deve ser ligado a uma tomada de 230 V de corrente alterna e 50 Hz, com ligação à terra, protegida com um interruptor diferencial (RCD) com uma corrente de funcionamento residual que não exceda os 30 mA.
- É imprescindível utilizar um dispositivo de desconexão múltiplo com uma separação mínima de 3 mm entre contactos para desligar o filtro da alimentação eléctrica.

1 COMPONENTES DA EMBALAGEM

O filtro que acaba de comprar é um aparelho especialmente concebido e desenhado para piscinas elevadas. Com um desenho inovador e uma grande funcionalidade, dispõe dos diferentes elementos necessários para filtrar a água:
filtro, bomba e válvula selectora num só aparelho. Os principais componentes deste filtro são:

Modelo	***Fig.***	***Posição.***	***Designação***
AR700 / AR700C	1	1	Válvula de 5 vias colector excêntrico
AR700 / AR700C	1	2	Diâmetro filtro Ø300
AR700 / AR700C	1	3	Base monobloco Ø300
AR700 / AR700C	1	4	Mangueira de ligação de Ø38 x 460
AR700 / AR700C	1	5	Cobertura motor
AR7050/ AR7050C	1	10	Válvula de 6 vias colector excêntrico
AR7050/ AR7050C	1	2	Diâmetro filtro Ø300
AR7050/ AR7050C	1	3	Base monobloco Ø300

AR7050/ AR7050C	1	4	Mangueira de ligação de Ø38 x 360
AR7050/ AR7050C	1	6	Bomba
AR7050/ AR7050C	13	1	Braçadeira
AR7050/ AR7050C	13	2	Porca Ø 2 1/4"
AR7050/ AR7050C	13	3	Macho de ligação Ø38
AR7050/ AR7050C	13	4	Junta circular
AR710 / AR710C	1	7	Base monobloco Ø380
AR710 / AR710C	1	8	Diâmetro filtro Ø380
AR710 / AR710C	1	10	Válvula de 6 vias colector excêntrico
AR710 / AR710C	1	12	Mangueira de ligação de Ø38 x 580
AR710 / AR710C	1	13	Bomba
AR710 / AR710C	13	1	Braçadeira
AR710 / AR710C	13	2	Porca Ø 2 1/4"
AR710 / AR710C	13	3	Macho de ligação Ø38
AR710 / AR710C	13	4	Junta circular
AR715 / AR715C	1	7	Base monobloco Ø380
AR715 / AR715C	1	9	Diâmetro filtro Ø430
AR715 / AR715C	1	11	Válvula de 6 vias colector centrado
AR715 / AR715C	1	12	Mangueira de ligação de Ø38 x 580
AR715 / AR715C	1	14	Bomba
AR715 / AR715C	14	1	Braçadeira
AR715 / AR715C	14	2	Porca Ø 2 1/4"
AR715 / AR715C	14	3	Macho de ligação Ø38
AR715 / AR715C	14	4	Junta circular
Manómetro, mangueiras de ligação à piscina, skimmer e silex NÃO FORNECIDOS nos modelos AR700 / AR7050 / AR710 / AR715			

PARA INSTALAR O APARELHO CORRECTAMENTE

Devido à facilidade de instalação, este aparelho pode ser montado por uma pessoa adulta em aproximadamente 2 horas, com a devida precaução de seguir rigorosamente as instruções descritas neste manual.

Para a manipulação correcta dos componentes do aparelho e a sua correcta instalação, são necessárias as seguintes
ferramentas:

Função	**Ferramenta**	**Ferramenta alternativa**
Apertar os flanges das mangueiras	Chave de parafusos stecker 7mm	Chave de parafusos philips
Recortar o liner	X-acto	Lâmina
Protecção do tubo do colector	Pedaço de plástico	Pedaço de tecido

2 ANTES DE LIGAR O FILTRO

Instalação

Coloque o aparelho sobre uma superfície plana e sólida, a uma distância não inferior a 3,5 metros da piscina (segundo a norma de instalação de aparelhos eléctricos em piscinas vigente em cada região ou país) e no mesmo nível do fundo da piscina, para evitar que entre ar no circuito de depuração e se forme uma câmara de ar no filtro (fig. 2). É conveniente proteger o filtro do sol e da chuva e mantê-lo com uma ventilação suficiente. Nunca cubra o aparelho durante o seu funcionamento.

Nos aparelhos em que se fornecem as mangueiras de ligação com a piscina, estas têm um comprimento de 4,5 metros. Verificar em todos os casos que esse comprimento é suficiente para a colocação do aparelho numa superfície plana e sólida e situado a mais de 3,5 metros da piscina. No caso do comprimento das mangueiras não ser suficiente, contacte o seu serviço técnico. No caso de não se fornecerem as mangueiras com o aparelho, devem usar-se mangueiras com um comprimento mínimo de 4,5 metros que permitam a colocação do aparelho de filtração numa superfície plana e sólida e a mais de 3,5 metros da piscina. Esse conjunto de mangueiras existe como kit opcional no seu vendedor.

Coloque e fixe o aparelho sobre uma superfície plana e sólida, a uma distância não inferior a 3,5 metros da piscina (segundo a norma de instalação de aparelhos eléctricos em piscinas vigente em cada região ou país) e a um nível

inferior ao nível da água da piscina (fig. 1). É conveniente que a superfície seja plana e firme e que o aparelho fique preso de forma correcta e firme antes do funcionamento. Deve ficar num lugar resguardado do sol, da chuva e de possíveis pancadas.

Em caso de dúvida durante o processo de instalação, contacte o vendedor do aparelho ou um serviço técnico autorizado.

Montagem

Uma vez colocado o aparelho, proceda do seguinte modo:

- Siga as indicações do manual fornecido com o aparelho no qual se indicam os passos iniciais para a montagem do aparelho.
- Coloque correctamente o colector interior no fundo do filtro (fig. 6).
- Tape a boca do tubo do colector situado no interior do filtro com um plástico de protecção para evitar a entrada de areia (Fig.5).
- Introduza a areia no interior do filtro:
    - 25 Kg no modelo AR700 e AR7050.
    - 40 Kg no modelo AR710.
    - 70 Kg no modelo AR715.

A areia de sílex tem uma duração ilimitada. Apenas deve ser reposta em caso de perda. Anote a referência do nível de areia de sílex para futuras reposições (fig. 5).

- Elimine os restos de areia da boca do filtro e retire o plástico de protecção.
- Coloque novamente a válvula selectora TOP com a respectiva junta e coloque o anel ou fecho.
- Aperte com força o parafuso do anel que prende a válvula ao filtro (fig.4).
- Efectue a ligação dos terminais de aspiração e de impulsão da válvula selectora das mangueiras de aspiração e de impulsão, fixando-as bem com as braçadeiras (fig. 9 e fig.12).

NOTA: Verifique se as mangueiras permitem a colocação e fixação do aparelho de filtração numa superfície plana e sólida e a mais de 3,5 metros da piscina (ver ponto 2.1).

- Ligue a outra extremidade da mangueira de aspiração ao skimmer apertando bem com uma braçadeira. Repita a mesma operação com o terminal da abertura de retorno e ligue a mangueira de impulsão.
- Uma vez instalado, deveremos efectuar um primeiro ciclo de auto-lavagem do filtro, para o que procederemos do modo descrito no ponto 5.3.

3 LIGAÇÃO ELÉCTRICA

No que se refere à instalação eléctrica dever-se-á seguir a norma:

Directiva Europeia 2006/95/CE de aparelhos de baixa tensão

EN 60335-2-41, segurança em aparelhos electrodomésticos e análogos, requisitos particulares para bombas

Assim como as normas aplicáveis relativas "*à construção de instalações eléctricas em locais especiais. Piscinas e fontes"* ou a normas análogas, vigentes em cada região ou país.

O aparelho deve ser ligado a uma tomada de 230 V de corrente alterna e 50 Hz, com ligação à terra, protegida com um interruptor diferencial (RCD) com uma corrente de funcionamento residual que não exceda os 30 mA. (Não fornecido. Pode adquirir-se em estabelecimentos de electricidade.)

É imprescindível utilizar um dispositivo de desconexão múltiplo com uma separação mínima de 3 mm entre contactos para deixar o aparelho sem tensão quando não está a ser utilizado (Não fornecido. Pode adquirir-se em estabelecimentos de electricidade.)

4 VÁLVULA SELECTORA SUPERIOR

Através da válvula selectora superior do filtro seleccionamos as 5 diferentes funções do filtro: filtração (filter), lavagem(backwash), Enxaguamento (rinse)esvaziamento (waste) e fechado (closed) no modelo AR700.
Através da válvula selectora superior do filtro seleccionamos as 6 diferentes funções do filtro: filtração (filter), lavagem
(backwash), recirculação (recirculate), enxaguamento (rinse), esvaziamento (waste) e fechado (closed) no modelo AR710 e AR715.

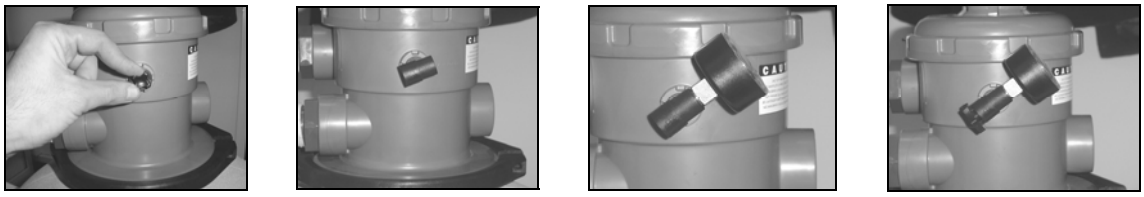
Para alterar a posição da válvula, proceder para os modelos AR7050,AR700, AR710 e AR715 do seguinte modo: fig. 7

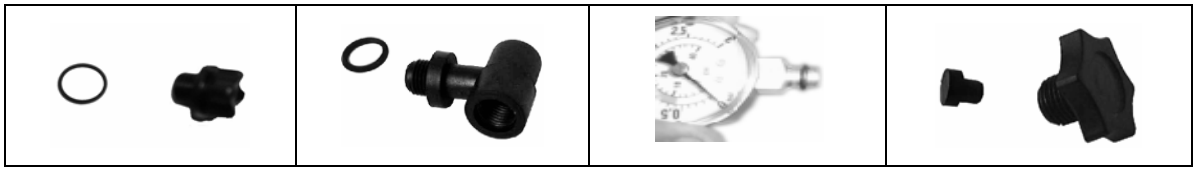
- Desligue o aparelho da tomada.

- Pressione firmemente o comando superior da válvula desencaixando o nervo anterior do seu alojamento para poder girá-la.
- Gire suavemente o comando até alinhar o nervo anterior com o alojamento da operação desejada.
- Solte o comando devagar, verificando se o nervo anterior se encontra bem encaixado no seu alojamento.

Montagem do manómetro nos modelos AR7050, AR710 e AR715

SEM MANÓMETRO 1 2 3





5 FUNCIONAMENTO

O funcionamento deste aparelho baseia-se na capacidade de filtração da areia de sílex presente no seu interior. A água da piscina é impulsionada pela bomba do filtro e forçada a passar através da areia de sílex, ficando retidas as impurezas da água na areia que actua como elemento filtrante. O ambiente, árvores, pólen, insectos e frequência de banhos são, entre outros, factores que determinam a sujidade da água da piscina e, portanto, a frequência de limpeza da areia de sílex do filtro (ver ponto 5.3).Para manter a água da piscina em bom estado deverá utilizar também os produtos químicos recomendados pelo fabricante (cloro, anti-algas, floculante, etc.)

O PRODUTO QUÍMICO NUNCA DEVE SER COLOCADO NA CESTA OU ATRAVÉS DO FILTRO, JÁ QUE ISSO DETERIORARIA OS MATERIAIS DO APARELHO E LIMITARIA A SUA EFICÁCIA

5.1 Purga do filtro

É imprescindível que o filtro esteja sempre correctamente purgado. Não estando purgado, significa que no seu interior se formou uma câmara de ar que provoca a circulação defeituosa da água, impedindo a correcta filtração da
mesma pela areia de sílex e prejudicando o motor.
O filtro pode acumular ar por vários motivos:

- Pôr em funcionamento um aparelho novo.
- Pôr em funcionamento um aparelho após um longo período sem actividade.
- Após utilizar um limpador de fundos de aspiração.
- Absorção de ar pelo skimmer, devido a um nível baixo na água da piscina.
- Por uma incorrecta utilização do equipamento, da tampa de aspiração ou da tampa do skimmer.

Quando há uma acumulação de ar no filtro?

Detectaremos uma acumulação de ar no filtro quando se:

- Verificar que a água que entra no filtro emite um ruído de queda livre, o que nos indica a formação de uma câmara de ar entre a entrada da água e a areia de sílex.
- Verificar uma saída excessiva de bolhas de ar pela abertura de retorno.
- Verificar que o limpador de fundos (não fornecido) não aspira, estando a areia de sílex limpa após uma lavagem.

Como purgar o filtro?

- Assegure-se de que a mangueira de aspiração esteja ligada ao skimmer e à passagem aberta (sem a tampa).
- Desligue o aparelho da tomada.
- Com a válvula na posição de filtração (filter), desaperte um pouco a porca de purga que se encontra junto ao manómetro para deixar sair o ar acumulado no interior do filtro. Se não tiver colocado o manómetro, coloque a válvula na posição WASTE.
- Quando observar que sai apenas água (entre 1 e 2 minutos), aperte novamente a porca de purga.
- Ligue o filtro à tomada e assegure-se de que a água já não emite o ruído de queda livre. Caso contrário, repita a operação.

5.2 Filtração

NUNCA MANIPULE A VÁLVULA COM O MOTOR EM FUNCIONAMENTO

Antes da filtração inicial, realize uma lavagem da areia (ponto 5.3).
A válvula deve estar na posição de filtração (FILTER). A vida útil do filtro pode ser prolongada com períodos de funcionamento contínuos não superiores a 4 h. A necessidade de filtração diária é dada pelo volume de m^3 de água da sua piscina em relação aos m^3/h do caudal do filtro para uma temperatura da água de 21º C aproximadamente e colocado a 3,5 m da sua piscina. Deixe o motor descansar no mínimo 2 horas entre cada período de funcionamento de 4 horas.

Volume piscina em m^3	= Horas necessárias
Caudal filtro em m^3/h	

Exemplo:

$$\frac{42\ m^3}{5{,}5\ m^3/h} = 7{,}63 \text{ horas}$$

2 ciclos de 4 horas com um ciclo intermédio de 2 horas de descanso

No tratamento inicial de filtração, devem ser respeitados os períodos de descanso indicados. Recomenda-se aumentar o tempo de filtração quanto mais elevada for a temperatura da água da sua piscina.

5.3 Lavagem do filtro

Com o processo de auto-lavagem procedemos à limpeza da areia de sílex do interior do filtro, para o que se deve inverter o sentido de circulação da água através da válvula selectora superior. Este processo deve ser realizado regularmente, por isso dever-se-á estar atento aos vários factores que determinam a sujidade da areia:

- Detecção de uma redução do caudal de retorno, uma vez verificado que a bomba está bem purgada.
- Indicação de uma pressão excessiva (agulha situada entre os sinais amarelo e vermelho, ou sobre o sinal vermelho) no manómetro (posição 1 da desmontagem do monobloco).

Para a lavagem da areia deveremos proceder nos modelos AR7050, AR710 e AR715 do seguinte modo:

- Desligue o aparelho da tomada. Nunca mova a válvula selectora com o motor em funcionamento.
- Pressione firmemente o comando superior da válvula desencaixando o nervo anterior do seu alojamento para poder girá-la (fig. 7).
- Gire suavemente o comando até alinhar o nervo anterior com o alojamento da operação de lavagem (backwash) (fig. 7).
- Ligue a mangueira de ø 38 mm x 1,5 m(nos modelos AR715 através do encaixe de 1 ½")na saída de esvaziamento (waste) da válvula e dirija a outra extremidade da mangueira para um desaguadouro ou esgoto.
- Faça o filtro funcionar durante 2 min. aproximadamente, até que já não saiam impurezas com a água,nos modelos AR715 o que se pode observar pelo visor transparente na lateral.
- Pare o aparelho.
- Coloque a válvula na posição de enxaguamento (rinse) e ligue o filtro durante uns segundos (fig. 7).
- Pare o aparelho, passe à posição desejada de filtragem (filter) (fig. 7) e retire a mangueira da posição de esvaziamento (waste), se o desejar.Fig.12

5.4 Esvaziamento da piscina

O aparelho permite o esvaziamento quase total da piscina, uma vez terminada a temporada de banhos. Para isso, deverá colocar a válvula selectora superior na posição de esvaziamento (waste) (fig. 7), sem ligar o filtro, ligando a mangueira de ø 38 mm x 1,5 m(nos modelos AR715 através do encaixe de 1 ½") na saída livre da válvula selectora para dirigir a água até ao desaguadouro ou esgoto de acordo com o modelo de skimmer e proceder da seguinte forma:

No modelo com skimmer de parede para Piscinas Dream Pool (posição 1, fig. 3) e Piscinas Jet Pool (posição 2, fig. 3):

- Retire a cesta interior do skimmer e tape a aspiração com a tampa fornecida para esse fim.
- Desligue a mangueira de aspiração da tomada do skimmer, afrouxando a braçadeira que a prende e segurando a mangueira para não perder a água e mergulhe-a imediatamente na piscina para não acumular ar.
- Lastre a extremidade da mangueira de aspiração com um objecto pesado que não possa danificar o liner, para forçar a sua imersão até ao fundo da piscina.

- Ligue o aparelho e proceda ao esvaziamento da piscina. Lembre-se que com a ajuda do aparelho a piscina não se esvaziará totalmente. Quando restarem alguns centímetros de água e a bomba já não aspirar água, deverá desligá-la.
- Depois de pôr o aparelho a funcionar para esvaziar a piscina, não interrompa o processo até ao final para não entrar ar.
- Se quiser encher novamente a piscina com água, antes retire manualmente a restante água sem danificar o liner.
- Se quiser desmontar a piscina pode dobrar o liner com a restante água no centro.
- Retire a chapa no modelo DREAM POOL ou os tubos no modelo JET POOL.
- Desdobrar o liner para esvaziá-la completamente.
- Esta operação só deve ser efectuada para desmontar a piscina.

No modelo com skimmer autoportante para Piscinas Magic Pool: (posição 3, fig. 3)

Para além do desaguadouro que a piscina incorpora, poderá utilizar o aparelho para esvaziá-la:

- Levante o skimmer autoportante até deixá-lo dependurado no lado exterior da piscina, para evitar que a água entre nele.
- Desligue a mangueira de aspiração da tomada do skimmer pela parte exterior da parede da piscina, afrouxando a braçadeira que a prende com cuidado para não danificar o liner e segurando a mangueira para não perder a água e mergulhe-a imediatamente na piscina para não acumular ar.
- Lastre a extremidade da mangueira de aspiração da tomada do skimmer com um objecto pesado que não possa danificar o liner, para forçar a sua imersão até ao fundo da piscina.
- Ligue o aparelho e proceda ao esvaziamento da piscina. Lembre-se que com a ajuda do aparelho a piscina não se esvaziará totalmente, quando restarem alguns centímetros de água e a bomba já não aspirar água, deverá desligá-la.
- Uma vez colocado em funcionamento o aparelho para esvaziar a piscina, não interromper o processo até ao final para não acumular ar.
- Se quiser encher novamente a piscina de água, escoe a restante água num desaguadouro sem danificar a piscina.

EVITE QUE A MANGUEIRA ASPIRE O FUNDO DO LINER DA PISCINA, POIS PODERIA PREJUDICAR SERIAMENTE A BOMBA AO FUNCIONAR SEM CIRCULAÇÃO DE ÁGUA OU DANIFICAR O LINER POR SUCÇÃO

5.5 Limpeza do fundo da piscina

Para a limpeza do fundo da piscina, pode utilizar o aparelho com um dos seguintes acessórios:
Limpador de fundos “Riñón”, Limpador de fundos “Oval” (também precisará de utilizar a mangueira de Ø38 mm e a vara). Consulte o estabelecimento ou o Serviço Pós-venda do fabricante da piscina para a sua aquisição. Utilize sempre peças de substituição originais.
Um mangueira com um comprimento superior ao necessário para chegar a todos os pontos da piscina dificulta a operação. Corte o pedaço de mangueira que sobrar. Assegure-se de que os terminais de borracha não perdem a sua estanqueidade.

Purga da mangueira do limpador de fundos:

Introduza com cuidado o limpador de fundos no interior da piscina com a vara e a mangueira ligadas verticalmente, deixando que se encha de água e mantenha o resto da mangueira fora da água. Introduza a mangueira na água devagar, por partes de 50 cm que devem ficar mergulhadas ao mesmo tempo que se enchem completamente de água, até que a mangueira fique toda cheia de água e mergulhada. Se a mangueira não estiver totalmente purgada, o limpador de fundos não aspirará e poderemos danificar o dreno fazendo-o trabalhar em vácuo.

5.6 5.6 Enxaguamento nos modelos AR710 e AR715

Após a “LAVAGEM” do filtro e de se colocar a instalação na posição de “FILTRAÇÃO”, durante uns segundos a água aflui à piscina numa cor turva. Para evitar que esta água turva circule na piscina, existe a posição da válvula selectora “ENXAGUAMENTO”.
Actue da seguinte forma: imediatamente após a “LAVAGEM”, pare a bomba, coloque a válvula na posição de “ENXAGUAMENTO” (fig. 7) e ligue a bomba durante 1 minuto, após o que deve parar a bomba e colocar a válvula em “FILTRAÇÃO”.

5.7 Recirculação nos modelos AR710 e AR715

Nesta posição, a válvula selectora efectua a passagem da água proveniente da bomba directamente para a piscina, sem passar pelo interior do filtro (fig. 7).

5.8 Fechado

Utiliza-se a posição da válvula selectora fechado (CLOSED) para evitar a circulação da água através das mangueiras e do filtro (fig. 7).

6 SUBSTITUIÇÃO DO CABO

Se o cabo de alimentação estiver danificado, deve apenas ser substituído pelo fabricante ou pelo serviço técnico.

7 MANUTENÇÃO

Uma vez terminada a temporada de banhos, dever-se-á guardar o filtro num lugar seco e protegido das intempéries.
Por esse motivo e após efectuar uma auto-lavagem final para limpar a areia de sílex, desmonte as mangueiras e esvazie totalmente a água do filtro através da tampa de esvaziamento do depósito.
Uma vez escoada toda a água do filtro, limpe cuidadosamente os resíduos de areia de sílex da rosca antes de colocar novamente a tampa, já que a rosca poderia ficar inutilizada.
A tampa de esvaziamento do depósito do filtro apenas deve ser usada nesta operação.
MUITO IMPORTANTE: antes de colocar o aparelho em funcionamento após um longo período sem actividade, assegure-se de que o filtro está devidamente purgado.

CUIDADOS DA BOMBA

A bomba do aparelho está preparada para funcionar com uma manutenção mínima. Alguns elementos fúngicos ou submetidos a desgaste podem ter uma vida útil inferior ao período de garantia do aparelho.
Para qualquer operação de manutenção, contacte o fabricante da piscina ou o serviço técnico.

Resolução de avarias e serviço técnico

Este aparelho e as suas instruções foram especialmente desenhados para uma utilização familiar, sem necessidade de uma intervenção profissional, salvo em casos especiais. Apresentamos abaixo os problemas e as causas que podem surgir com a passagem do tempo de vida útil do filtro e que poderá solucionar. Em caso de não poder solucionar o seu
problema, contacte o fabricante da piscina para o número de telefone e horário indicados nas instruções.

MODELOS AR700,AR7050,AR710

PROBLEMA	CAUSA	SOLUÇÃO
O filtro goteja pelos terminais das mangueiras.	Ligação incorrecta dos terminais com as mangueiras.	Ponha teflon nos alojamentos, introduza os terminais das mangueiras até ao fundo do alojamento e aperte as braçadeiras.
Uma vez ligado o filtro, não há caudal na abertura de retorno.	A válvula não está na posição de filtração (filter).	Desligue o filtro e coloque a válvula na posição correcta..
	O aparelho está acima do nível da água com ar acumulado.	Coloque o filtro numa posição correcta e purgue-o.
	A tampa de aspiração ou o tampão do skimmer estão colocados.	Retire a tampa de aspiração ou a tampa do skimmer.
Funcionamento intermitente.	Nível da água no skimmer baixo.	Encha a piscina e purgue o filtro.
	O filtro acumula ar.	Proceda à purga do filtro.
O aparelho tem pouco caudal.	Devido ao uso o filtro está sujo.	Efectue una auto-lavagem.
	O filtro acumula ar.	Proceda à purga do filtro.
Sai água pela boca do aparelho.	A zona de união entre a válvula e o filtro está suja.	Limpe a areia da boca, coloque correctamente a junta na válvula e aperte o anel com força.
	O anel está frouxo.	

PROBLEMA	CAUSA	SOLUÇÃO
A válvula do filtro goteja pelo terminal de esvaziamento (WASTE).	Junta interior danificada pelo uso incorrecto do produto químico.	Substitua a tampa superior da válvula.
		Não coloque o produto químico na cesta pré-filtro do skimmer.
	Válvula cabeçote danificada por uso incorrecto (aperto excessivo).	Substitua a válvula cabeçote, não aperte excessivamente.
O motor não arranca. Não faz nenhum ruído ou vibração.	Falta corrente na linha eléctrica.	Verifique se há corrente na linha eléctrica.

MODELOS AR715

PROBLEMA	CAUSA	SOLUÇÃO
O filtro goteja pelos terminais das mangueiras.	Ligação incorrecta dos terminais com as mangueiras.	Ponha teflon nos alojamentos, introduza os terminais das mangueiras até ao fundo do alojamento e aperte as braçadeiras.
Uma vez ligado o filtro, não há caudal na abertura de retorno.	A válvula não está na posição de filtração (filter).	Desligue o filtro e coloque a válvula na posição correcta..
	O aparelho está acima do nível da água com ar acumulado.	Coloque o filtro numa posição correcta e purgue-o.
	A tampa de aspiração ou o tampão do skimmer estão colocados.	Retire a tampa de aspiração ou a tampa do skimmer.
Funcionamento intermitente.	Nível da água no skimmer baixo.	Encha a piscina e purgue o filtro.
	O filtro acumula ar.	Proceda à purga do filtro.
O aparelho tem pouco caudal.	Devido ao uso o filtro está sujo.	Efectue uma auto-lavagem.
	O filtro acumula ar.	Proceda à purga do filtro.
Sai água pela boca do aparelho.	A zona de união entre a válvula e o filtro está suja.	Limpe a areia da boca, coloque correctamente a junta na válvula e aperte o anel com força.
	O anel está frouxo.	
A válvula do filtro goteja pelo terminal de esvaziamento (WASTE).	Junta interior danificada pelo uso incorrecto do produto químico.	Substitua a tampa superior da válvula.
		Não coloque o produto químico na cesta pré-filtro do skimmer.
	Válvula cabeçote danificada por uso incorrecto (aperto excessivo).	Substitua a válvula cabeçote, não aperte excessivamente.
O motor não arranca. Não faz nenhum ruído ou vibração.	Falta corrente na linha eléctrica.	Verifique se há corrente na linha eléctrica.
O motor não arranca, mas ouve-se um zumbido.	Falha no motor.	Contacte o serviço pós-venda do fabricante da piscina.
Perda de água.	Analise a causa da perda de água.	Verifique as braçadeiras das mangueiras.
		Se perde entre a bomba e o motor, contacte o serviço pós-venda do fabricante da piscina.

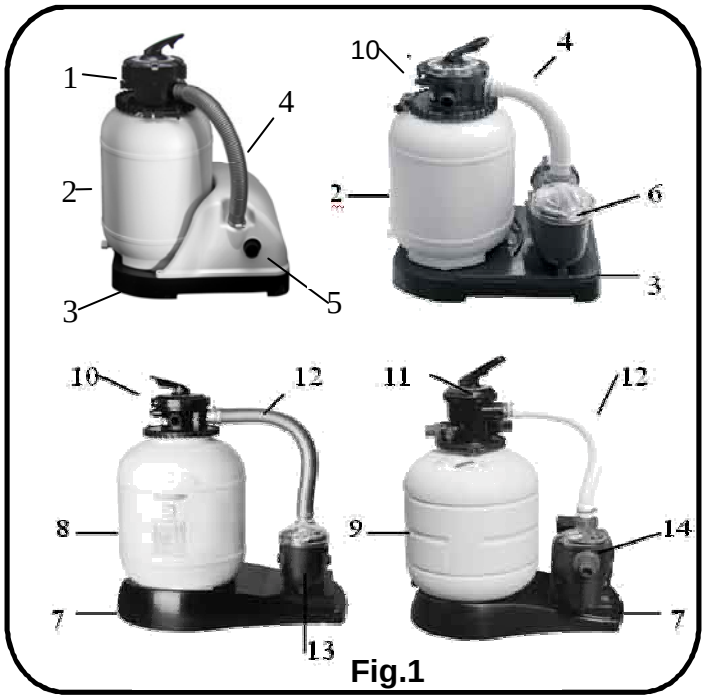


Fig.1

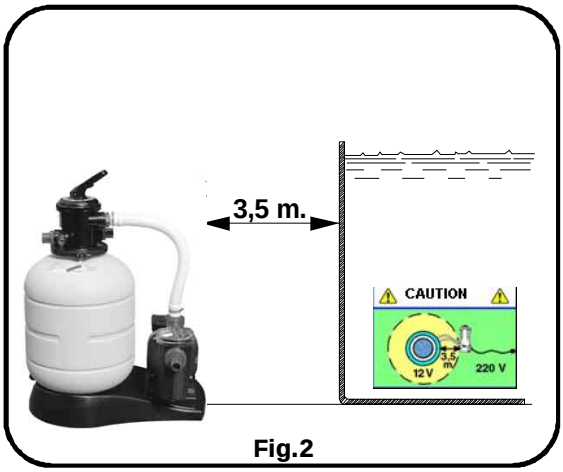


Fig.2

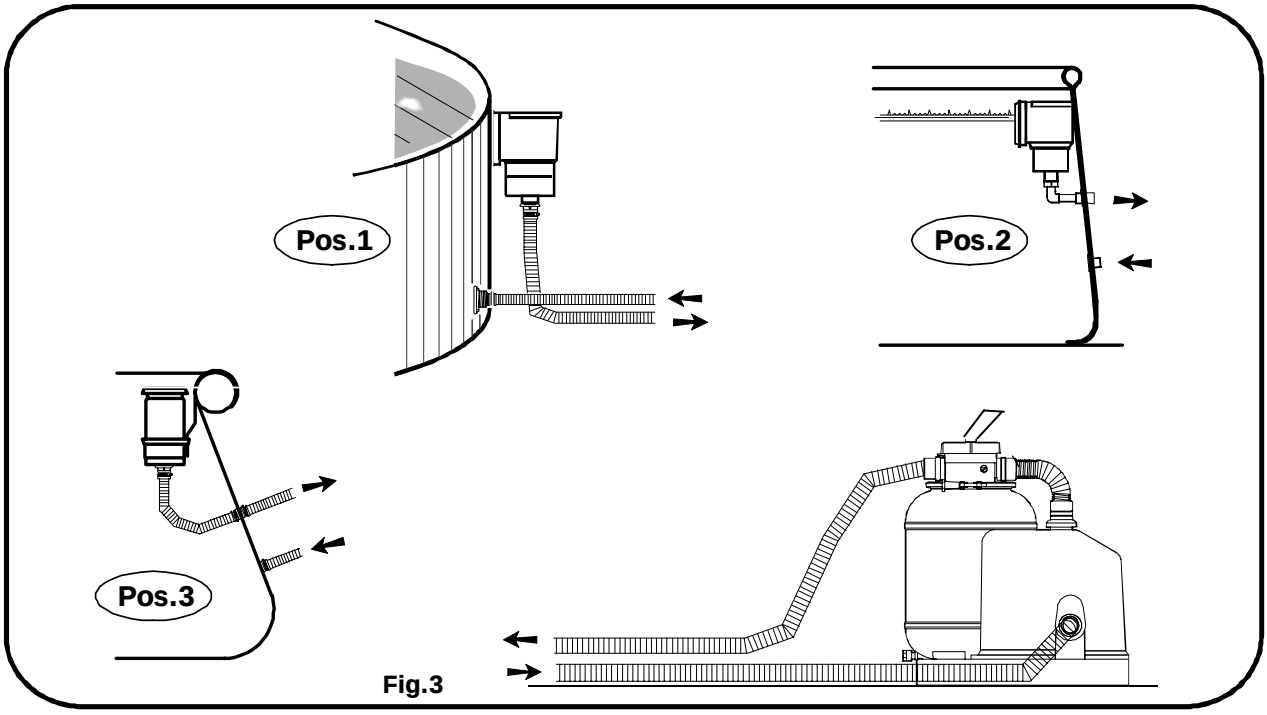


Fig.3

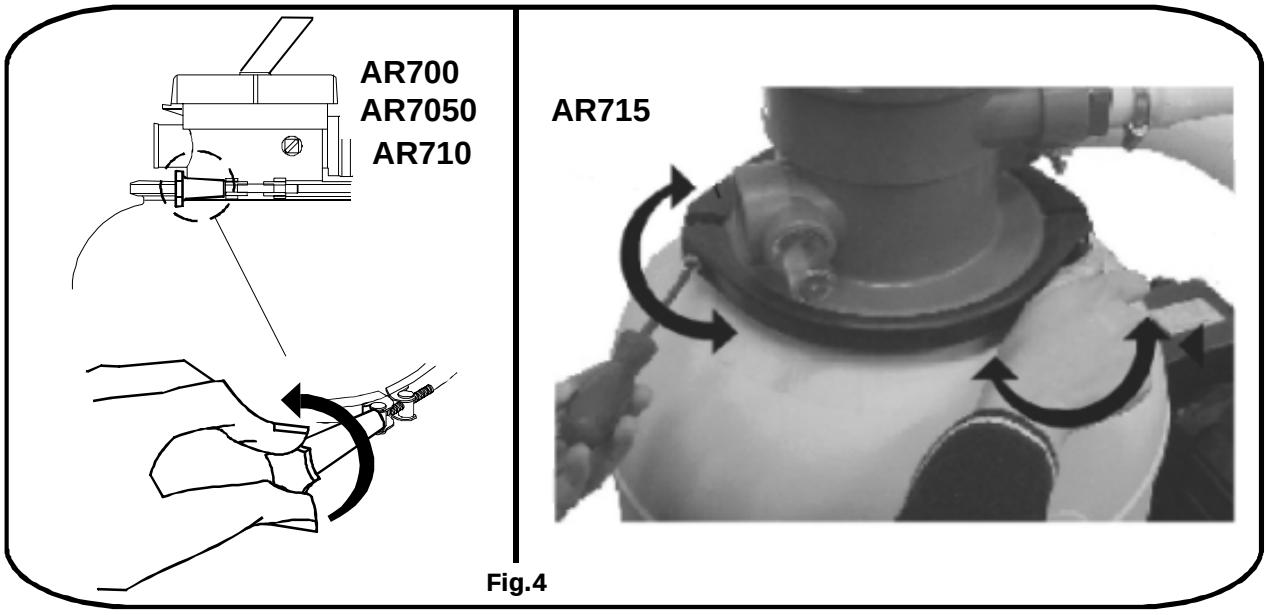
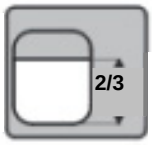


Fig.4



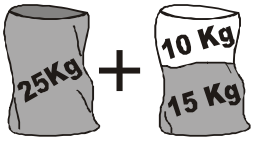
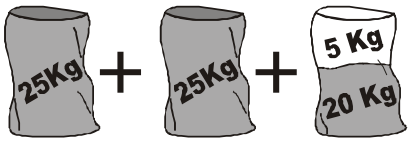
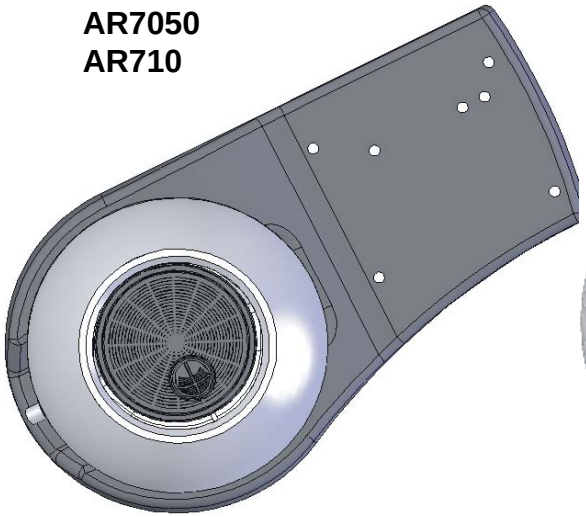
AR700	AR7050
25 Kg	25 Kg
AR710	**AR715**
 25 Kg + 15 Kg = 40 Kg	 25 Kg + 25 Kg + 20 Kg = 70 Kg

Fig.5

AR700
AR7050
AR710



AR715

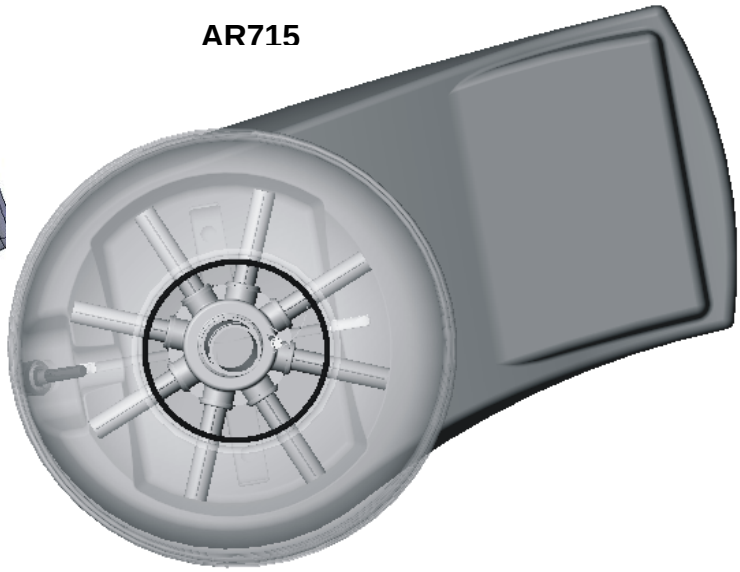


Fig.6

AR700
AR710
AR715
AR7050

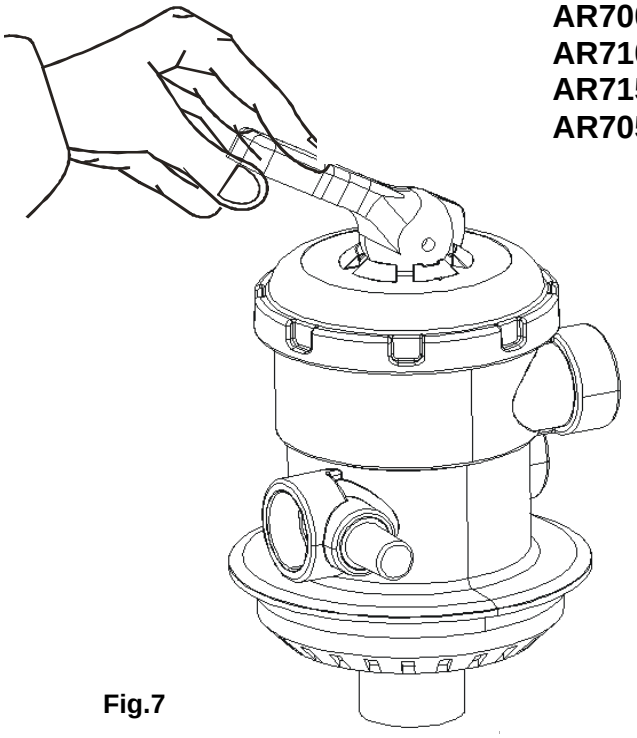
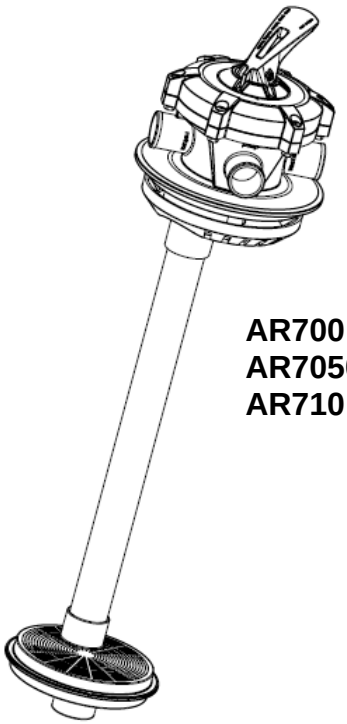
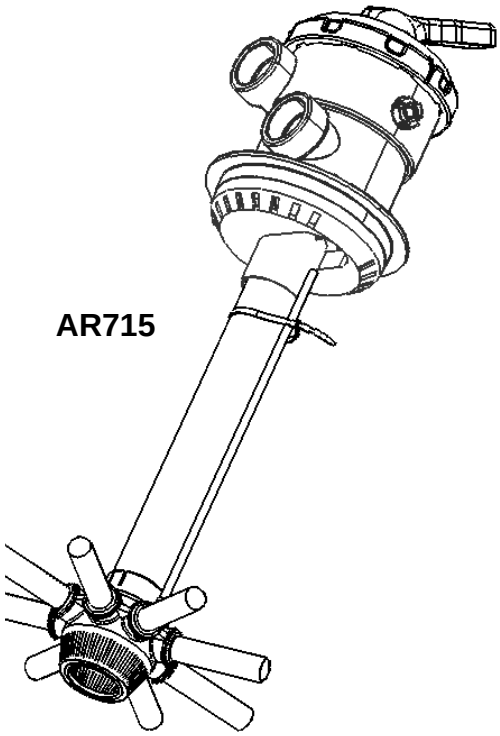


Fig.7



AR700
AR7050
AR710



AR715

Fig.8

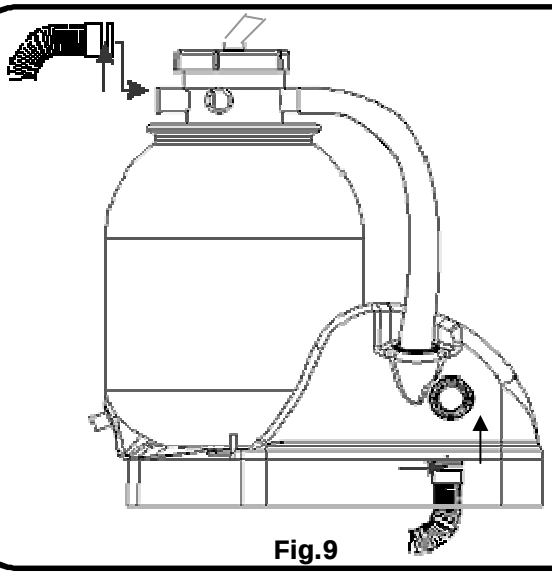
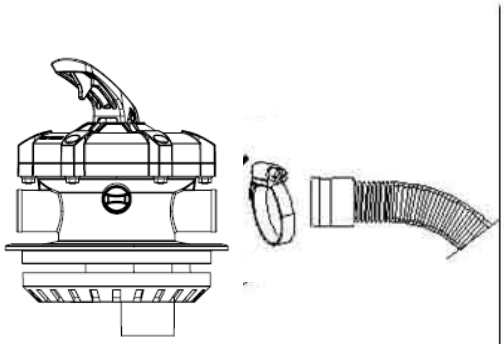
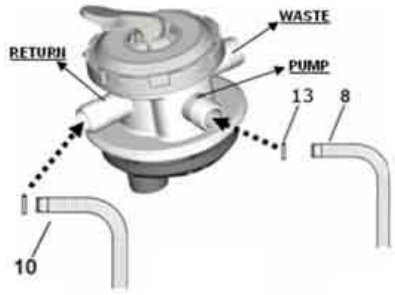


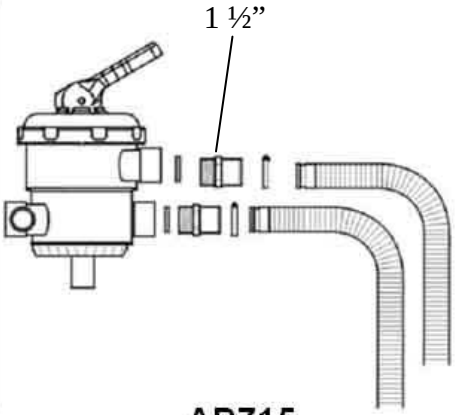
Fig.9



AR700

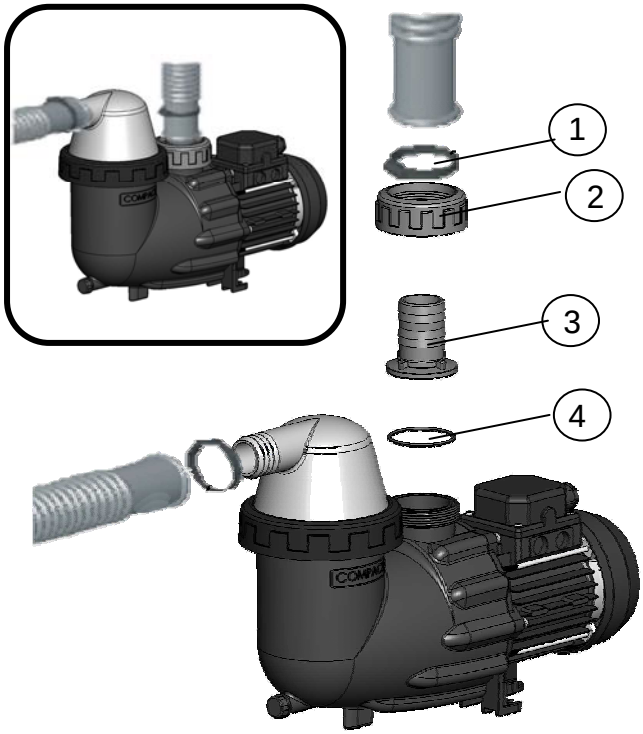


AR7050
AR710



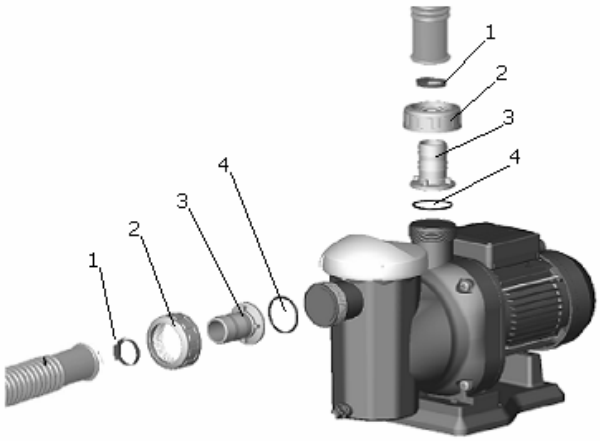
AR715

FIG.12



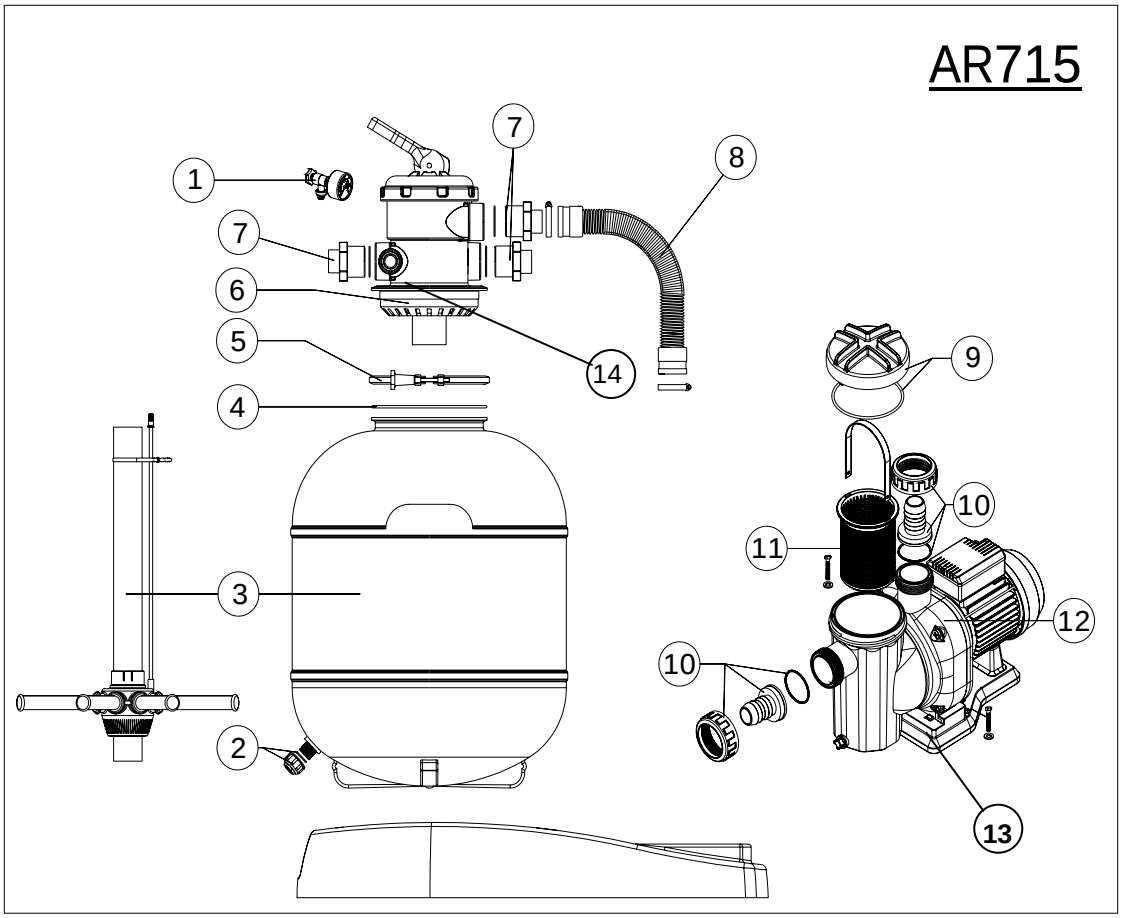
AR7050
AR710

FIG.13

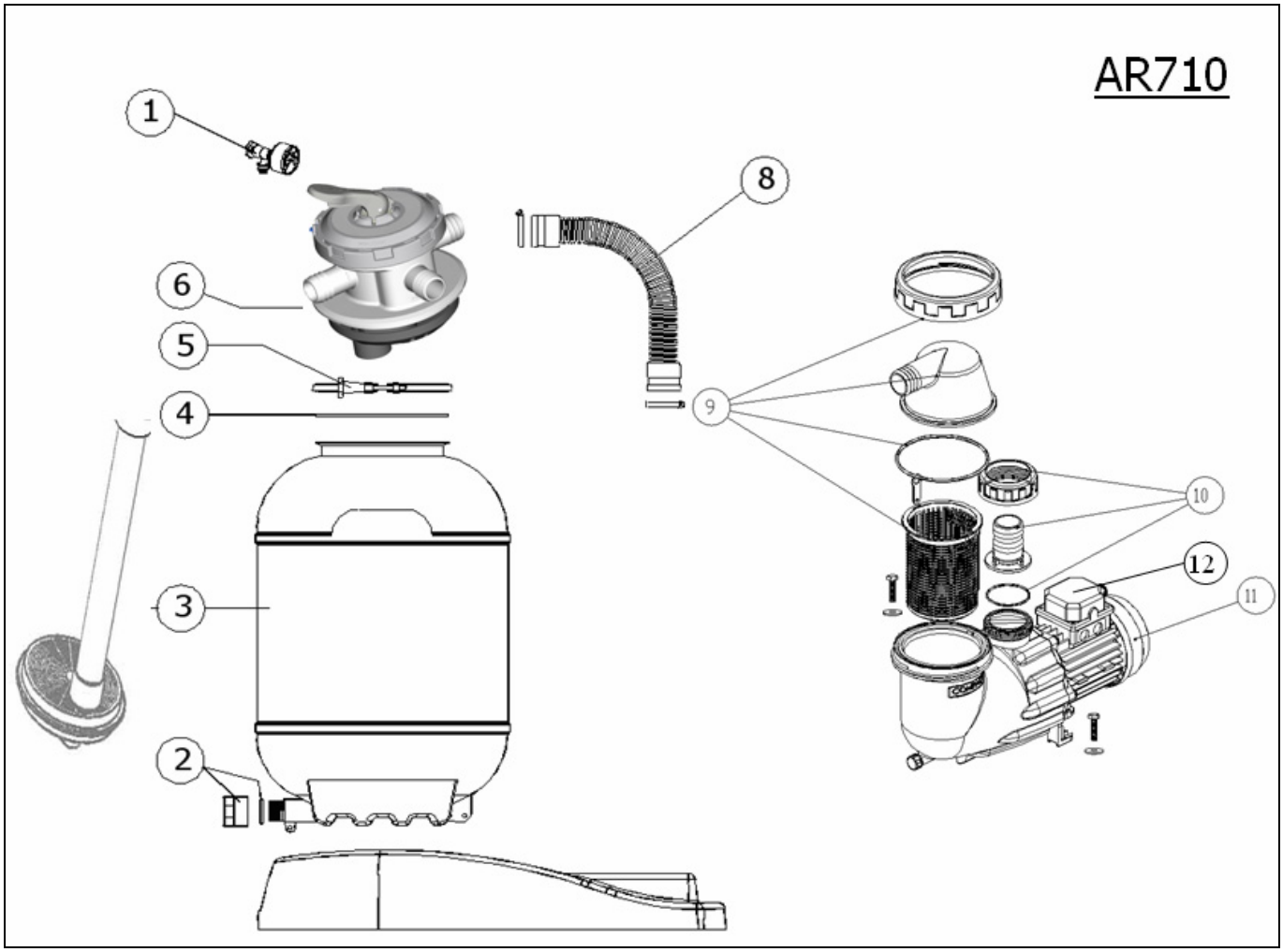


AR715

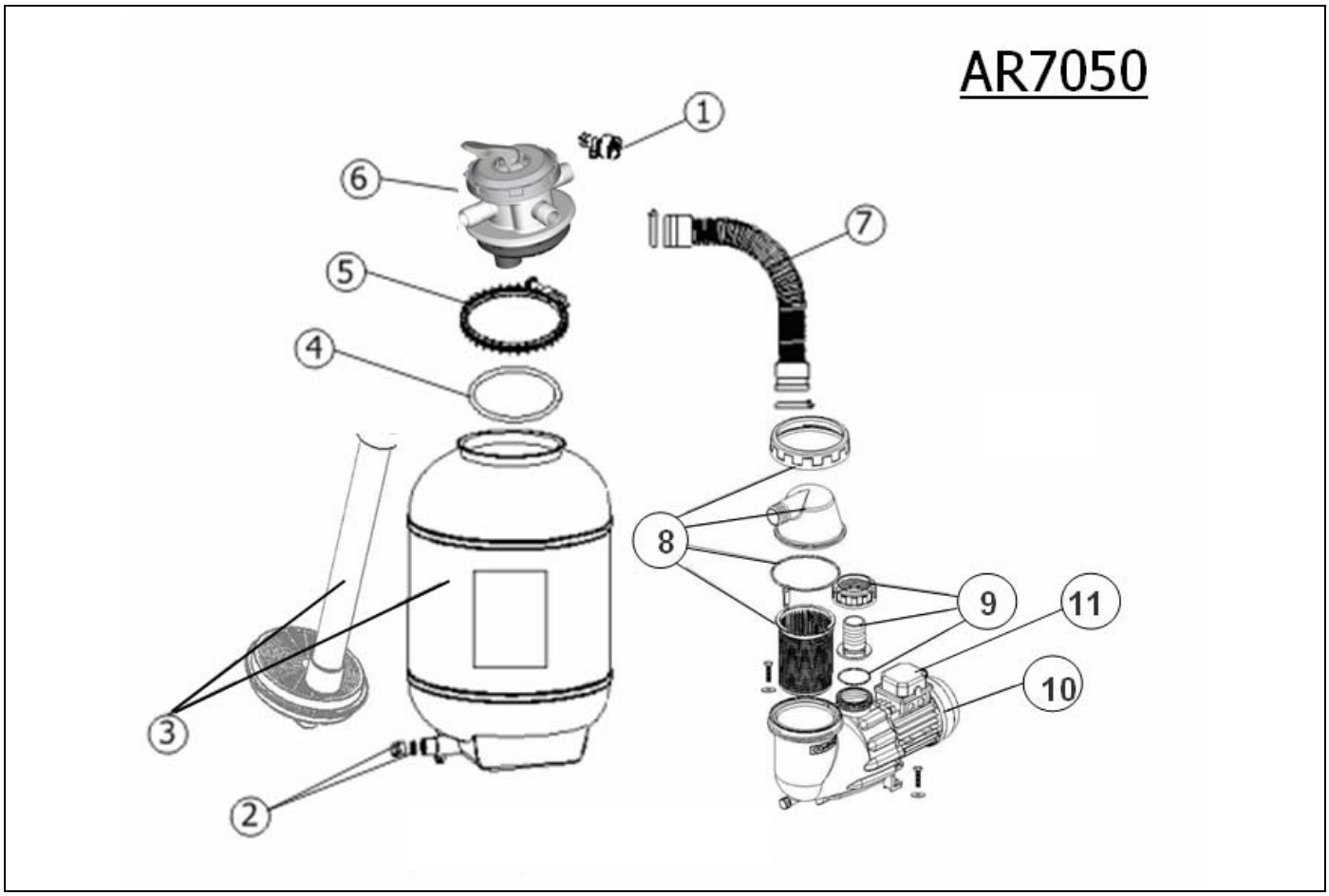
FIG.14



	Referencia	DENOMINATION	DENOMINACIÓN	DESIGNATION	BESCHREIBUNG	DENOMINAZIONE	OMSCHRIJVING	DESCRIÇAO
1	200473000	Pressurer gauge set	Cjto. Manometro	Ensemble manomètre				
2	157800602G	Sand purgue + sand pugue seal	Tapón purga + junta plana	Bouchon de purge + Joint du couvecercle de purge	Entlüftungsdeckel + Dichtung	Tappo di spurgo + O-ring spurgp	Reinigingsplug + Pakking	Tapão purga + Junta tampão purga
3	283030100G	Filter body ø430 + Collector head	Cuerpo filtro Ø430 + cabezal colector	Filtre ø430 + Collecteur filtre	Filterkörper ø430 + Filterkopf	Corpo filtro ø430 + Collettore filtro	Filterhuis ø430 + Collector filter	Filtro ø430 + Colector filtro
4	720R1750057	O-ring cover	Junta tapa	Joint torique couvercle	O-Ring des Deckels	O-ring copertura	O-ring deksel	O-ring tampa
5	241821003G	Filter ring	Zuncho	Collier de fixation	Filterspannring	Ghiera filtro	Spanring filter	Braçadeira filtro
6	21442G	1-1/2" Top valve	Válvula top 1-1/2"	Vanne top 1-1/2"	1-1/2" Ventil top	Valvola top 1-1/2"	Ventiel top 1-1/2"	Válvula top 1-1/2"
7	09636	Return butt	Manguito	Raccord	Aussto	Raccord	Mof	União
8	09089R0002	Connection hose Ø38X580	Manguera conexión Ø38X580	Tuyau de connexion Ø38X580	Verbindungs-schlauch Ø38X580	Manicotto di collegamento Ø38X580	Aansluitslang Ø38X580	Mangueira ligação Ø38X580
9	254633535G	Bacap prefilter cover + O´ring 118x4mm.	Tapa prefiltro Bacap + junta tórica	Couvercle préfiltre Bacap + Joint torique 118x4mm.	Vorfilterdeckel Bacap + Dichtungsring 118x4mm.	Coperchio prefiltro Bacap + Dichtungsring 118x4mm.	Coperchio prefiltro Bacap + Dichtungsring 118x4mm.	Tampa pré-filtro Bacap + Dichtungsring 118x4mm.
10	25470G0102	Union nut + Union Ø38mm. + O´ring 54x2.5mm.	Tuerca manguito gris + macho unión Ø38 mm. + junta tórica	Écrou racordsunion gris + Machón union tuyau Ø38mm. + Joint torique 54x2.5mm.	Verbindungsschauben + Schlauchverbindung Ø38mm. + Dichtungsring 54x2.5mm.	Vite manicotto + Pilone unione tubo Ø38mm. + Guarnizione tórique 54x2.5mm.	Vite manicotto + Pilone unione tubo Ø38mm. + Guarnizione tórique 54x2.5mm.	Porca cachimbo + Macho união mangueira Ø Junta tórica 54x2.5mm.38mm. +
11	25470G0205	Bacap basket	Cesto	Panier Bacap	Vorfilterkorb Bacap	Cesto Bacap		Cesto Bacap
12	AMINO75H38H38G	Asiatic Min ¾ cv	Asiatic Min ¾ cv	Asiatic Min ¾ cv	Asiatic Min ¾ cv	Asiatic Min ¾ cv	Asiatic Min ¾ cv	Asiatic Min ¾ cv
13	254610502	Support motor	Soporte motor	Support moteur	Motorstütze	Supporto Motore	Motor steun	Suporte de motor
14	006000002G	Transparent visor with seal	Visor transparente + junta	dôme transparent + JOINT	Duzchsichtiges glass mit dichtung	Visore trasparente + guarnizione	Doorzichtig kijkglas + dichting	Visor transparente + junta
	1037B006	Bag accessory	Bolsa accesorios	sachet d'accessoires	Beutel mit zubehör	sacchetto accessori	Zakje met toebehoren	Saco de Acessórios

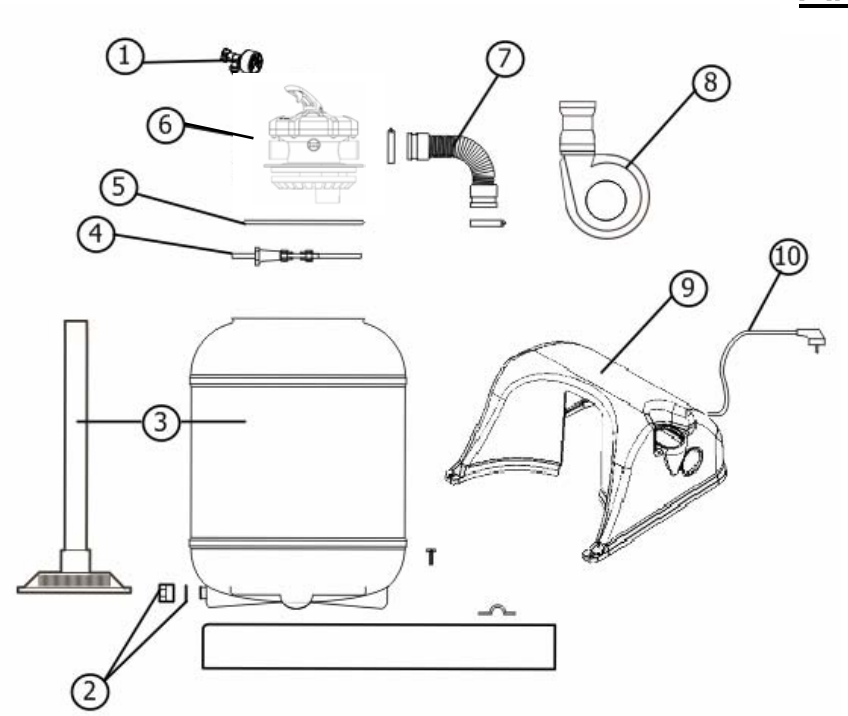


	REFERENCIA	DENOMINATION	DENOMINACIÓN	DESIGNATION	BESCHREIBUNG	DENOMINAZIONE	OMSCHRIJVING	DESCRIÇAO
1	200473000	Pressure gauge set	Conjunto manometro	Ensemble manomètre				
2	157800602G	Sand purgue + sand pugue seal	Tapón purga ¾" + junta plana	Bouchon de purge + Joint du couvecercle de purge	Entlüftungsdeckel + Dichtung	Tappo di spurgo + O-ring spurgp	Reinigingsplug + Pakking	Tapäo purga + Junta tampäo purga
3	19460R0002G	Filter body ø380 + Collector head	Cuerpo filtro Ø380 + cabezal colector	Filtre ø380 + Collecteur filtre	Filterkörper ø380 + Filterkopf	Corpo filtro ø380 + Collettore filtro	Filterhuis ø380 + Collector filter	Filtro ø380 + Colector filtro
4	720R1750057	O-ring cover	Junta tapa	Joint torique couvercle	O-Ring des Deckels	O-ring copertura	O-ring deksel	O-ring tampa
5	241821003G	Filter ring	Zuncho	Collier de fixation	Filterspannring	Ghiera filtro	Spanring filter	Braçadeira filtro
6	33904G	1-1/2" Top valve	Válvula top 1-1/2"	Vanne top 1-1/2"	1-1/2" Ventil top	Valvola top 1-1/2"	Ventiel top 1-1/2"	Válvula top 1-1/2"
8	09089R0002	Connection hose Ø38X580	Manguera conexión Ø38X580	Tuyau de connexion Ø38X580	Verbindungs-schlauch Ø38X580	Manicotto di collegamento Ø38X580	Aansluitslang Ø38X580	Mangueira ligação Ø38X580
8	25470G2000	Nut + Bacap prefilter cover + O´ring 118x4mm.+ Bacap basket	Tuerca + Tapa prefiltro Bacap + junta tórica + Cesto Bacap	Ecrou + Couvercle préfiltre Bacap + Joint torique 118x4mm.+ Panier Bacap	Verbindungsschauben + Vorfilterdeckel Bacap + Dichtungsring 118x4mm. + Vorfilterkorb Bacap	Vite + Coperchio prefiltro Bacap + Dichtungsring 118x4mm.+ Cesto Bacap	Vite + Coperchio prefiltro Bacap + Dichtungsring 118x4mm.+ Cesto Bacap	Porca + Tampa pré-filtro Bacap + Dichtungsring 118x4mm.+ Cesto Bacap
10	25470G0102	Union nut + Union Ø38mm. + O´ring 54x2.5mm.	Tuerca manguito gris + macho unión Ø38 mm. + junta tórica	Écrou racordsunion gris + Machón union tuyau Ø38mm. + Joint torique 54x2.5mm.	Verbindungsschauben + Schlauchverbindung Ø38mm. + Dichtungsring 54x2.5mm.	Vite manicotto + Pilone unione tubo Ø38mm. + Guarnizione tórique 54x2.5mm.	Vite manicotto + Pilone unione tubo Ø38mm. + Guarnizione tórique 54x2.5mm.	Porca cachimbo + Macho união mangueira Ø Junta tórica 54x2.5mm.38mm. +
11	25471G	0.6 CV Compact	Bomba 0.6 cv	Pompe 0.6 CV	Pumpe 0.6 CV	Pompa 0.6 CV	Pomp 0.6CV	Bomba 0.6 CV
12	25470G0105	condenser	Condensador	condesateur	kondensator	condensatore	condensator	Condensador
	0120B005	Bag accessory	Bolsa accesorios	sachet d'accessoires	Beutel mit zubehör	sacchetto accessori	Zakje met toebehoren	Saco de Acessórios



	REFERENCIA	DENOMINATION	DENOMINACIÓN	DESIGNATION	BESCHREIBUNG	DENOMINAZIONE	OMSCHRIJVING	DESCRIÇAO
1	09090R2000	Pressure gauge set	Conjunto manometro	Ensemble manomètre				
2	09090RG10	Sand purgue + sand pugue seal	Tapón purga 3/8" + junta plana	Bouchon de purge + Joint du couvecercle de purge	Entlüftungsdeckel + Dichtung	Tappo di spurgo + O-ring spurgp	Reinigingsplug + Pakking	Tapão purga + Junta tampão purga
3	08006R0001	Filter body ø300 + Collector head	Cuerpo filtro Ø300 + cabezal colector	Filtre ø300 + Collecteur filtre	Filterkörper ø300 + Filterkopf	Corpo filtro ø300 + Collettore filtro	Filterhuis ø300 + Collector filter	Filtro ø300 + Colector filtro
4	720R1750057	O-ring cover	Junta tapa	Joint torique couvercle	O-Ring des Deckels	O-ring copertura	O-ring deksel	O-ring tampa
5	241821003G	Filter ring	Zuncho	Collier de fixation	Filterspannring	Ghiera filtro	Spanring filter	Braçadeira filtro
6	33904G	1-1/2" Top valve	Válvula top 1-1/2"	Vanne top 1-1/2"	1-1/2" Ventil top	Valvola top 1-1/2"	Ventiel top 1-1/2"	Válvula top 1-1/2"
7	09081R0002G	Connection hose Ø38X360	Manguera conexión Ø38X360	Tuyau de connexion Ø38X360	Verbindungs-schlauch Ø38X360	Manicotto di collegamento Ø38X360	Aansluitslang Ø38X360	Mangueira ligação Ø38X360
8	25470G2000	Nut + Bacap prefilter cover + O´ring 118x4mm.+ Bacap basket	Tuerca + Tapa prefiltro Bacap + junta tórica + Cesto Bacap	Ecrou + Couvercle préfiltre Bacap + Joint torique 118x4mm.+ Panier Bacap	Verbindungsschauben + Vorfilterdeckel Bacap + Dichtungsring 118x4mm. + Vorfilterkorb Bacap	Vite + Coperchio prefiltro Bacap + Dichtungsring 118x4mm.+ Cesto Bacap	Vite + Coperchio prefiltro Bacap + Dichtungsring 118x4mm.+ Cesto Bacap	Porca + Tampa pré-filtro Bacap + Dichtungsring 118x4mm.+ Cesto Bacap
9	25470G0102	Union nut + Union Ø38mm. + O´ring 54x2.5mm.	Tuerca manguito gris + macho unión Ø38 mm. + junta tórica	Écrou racordsunion gris + Machón union tuyau Ø38mm. + Joint torique 54x2.5mm.	Verbindungsschauben + Schlauchverbindung Ø38mm. + Dichtungsring 54x2.5mm.	Vite manicotto + Pilone unione tubo Ø38mm. + Guarnizione tórique 54x2.5mm.	Vite manicotto + Pilone unione tubo Ø38mm. + Guarnizione tórique 54x2.5mm.	Porca cachimbo + Macho união mangueira Ø Junta tórica 54x2.5mm.38mm. +
10	25470G	0.4 CV Compact	Bomba 0.4 cv	Pompe 0.4 CV	Pumpe 0.4 CV	Pompa 0.4 CV	Pomp 0.4CV	Bomba 0.4 CV
11	25470G0105	condenser	Condensador	condesateur	kondensator	condensatore	condensator	Condensador
	1015B006	Bag accessory	Bolsa accesorios	sachet d'accessoires	Beutel mit zubehör	sacchetto accessori	Zakje met toebehoren	Saco de Acessórios

AR700



	REFERENCIA	DENOMINATION	DENOMINACIÓN	DESIGNATION	BESCHREIBUNG	DENOMINAZIONE	OMSCHRIJVING	DESCRIÇAO
1	09090R2000	Pressure gauge set	Conjunto manometro	Ensemble manomètre				
2	09090RG10	Sand purgue + sand pugue seal	Tapón purga 3/8" + junta plana	Bouchon de purge + Joint du couvecercle de purge	Entlüftungsdeckel + Dichtung	Tappo di spurgo + O-ring spurgp	Reinigingsplug + Pakking	Tapäo purga + Junta tampäo purga
3	08006R0001	Filter body ø300 + Collector head	Cuerpo filtro Ø300 + cabezal colector	Filtre ø300 + Collecteur filtre	Filterkörper ø300 + Filterkopf	Corpo filtro ø300 + Collettore filtro	Filterhuis ø300 + Collector filter	Filtro ø300 + Colector filtro
4	241821003G	Filter ring	Zuncho	Collier de fixation	Filterspannring	Ghiera filtro	Spanring filter	Braçadeira filtro
5	720R1750057	O-ring cover	Junta tapa	Joint torique couvercle	O-Ring des Deckels	O-ring copertura	O-ring deksel	O-ring tampa
6	XST002G	Top valve	Válvula top	Vanne top	Ventil top	Valvola top	Ventiel top	Válvula top
7	09082RG001	Connection hose Ø38X460	Manguera conexión Ø38X460	Tuyau de conexión Ø38X460	Verbindungs-schlauch Ø38X460	Manicotto di collegamento Ø38X460	Aansluitslang Ø38X460	Mangueira ligação Ø38X460
8	12000	Pump filter	Conjunto bomba	Pompe	Pumpeneinheit	Gruppo pompa	Pompeenheid	Conjunto bomba
9	09090R0099	Skid pack cover	Carcasa monobloc	Couvecercle monobloc	Monoblockdeckel	Coperchio monobloc	Deskel monoblock	Carcasa monobloc
10	00650G0004	Cable	Cable conexion	Cable electrique	Elektrokabel	Cavo di collegamento	Elektriciteitskabel	Cabo de ligaçao
11	32719B010	Bag accessory	Bolsa accesorios	sachet d'accessoires	Beutel mit zubehör	sacchetto accessori	Zakje met toebehoren	Saco de Acessórios

GUARANTEE CERTIFICATE

1 GENERAL TERMS

1.1 In accordance with these provisions, the seller guarantees that the product corresponding to this guarantee ("the Product") is in perfect condition at the time of delivery.
1.2 The Guarantee Term for the Product is two (2) years from the time it is delivered to the purchaser.
1.3 In the event of any defect in the Product that is notified by the purchaser to the seller during the Guarantee Term, the seller will be obliged to repair or replace the Product, at his own cost and wherever he deems suitable, unless this is impossible or unreasonable.
1.4 If it is not possible to repair or replace the Product, the purchaser may ask for a proportional reduction in the price or, if the defect is sufficiently significant, the termination of the sales contract.
1.5 The replaced or repaired parts under this guarantee, will not extend the guarantee period of the original Product, but will have a separate guarantee.
1.6 In order for this guarantee to come into effect, the purchaser must provide proof of the date of purchase and delivery of the Product.
1.7 If, after six months from the delivery of the Product to the purchaser, he notifies a defect in the Product, the purchaser must provide proof of the origin and existence of the alleged defect.
1.8 This Guarantee Certificate is issued without prejudice to the rights corresponding to consumers under national regulations.

2 INDIVIDUAL TERMS

2.1 This guarantee covers the products referred to in this manual.
2.2 This Guarantee Certificate will only be applicable in European Union countries.
2.3 For this guarantee to be effective, the purchaser must strictly follow the Manufacturer's instructions included in the documentation provided with the Product, in cases where it is applicable according to the range and model of the Product.
2.4 When a time schedule is specified for the replacement, maintenance or cleaning of certain parts or components of the Product, the guarantee will only be valid if this time schedule has been followed.

3 LIMITATIONS

3.1 This guarantee will only be applicable to sales made to consumers, understanding by "consumer", a person who purchases the Product for purposes not related to his professional activities.
3.2 The normal wear resulting from using the product is not guaranteed. With respect to expendable or consumable parts, components and/or materials, such as batteries, light bulbs, etc. the stipulations in the documentation provided with the Product, will apply.
3.3 The guarantee does not cover those cases when the Product; (I) has been handled incorrectly; (II) has been repaired, serviced or handled by non-authorised people or (III) has been repaired or serviced not using original parts.
In cases where the defect of the Product is a result of incorrect installation or start-up, this guarantee will only apply when said installation or start-up is included in the sales contract of the Product and has been conducted by the seller or under his responsibility.

CERTIFICADO DE GARANTÍA

1 ASPECTOS GENERALES

1.1 De acuerdo con estas disposiciones, el vendedor garantiza que el producto correspondiente a esta garantía ("el Producto") no presenta ninguna falta de conformidad en el momento de su entrega.
1.2 El Periodo de Garantía para el Producto es de dos (2) años y se calculará desde el momento de su entrega al comprador.
1.3 Si se produjera una falta de conformidad del Producto y el comprador lo notificase al vendedor durante el Periodo de Garantía, el vendedor deberá reparar o sustituir el Producto a su propio coste en el lugar donde considere oportuno, salvo que ello sea imposible o desproporcionado.
1.4 Cuando no se pueda reparar o sustituir el Producto, el comprador podrá solicitar una reducción proporcional del precio o, si la falta de conformidad es suficientemente importante, la resolución del contrato de venta.
1.5 Las partes sustituidas o reparadas en virtud de esta garantía no ampliarán el plazo de la garantía del Producto original, si bien dispondrán de su propia garantía.
1.6 Para la efectividad de la presente garantía, el comprador deberá acreditar la fecha de adquisición y entrega del Producto.
1.7 Cuando hayan transcurrido más de seis meses desde la entrega del Producto al comprador y éste alegue falta de conformidad de aquél, el comprador deberá acreditar el origen y la existencia del defecto alegado.
1.8 El presente Certificado de Garantía no limita o prejuzga los derechos que correspondan a los consumidores en virtud de normas nacionales de carácter imperativo.

2 CONDICIONES PARTICULARES

2.1 La presente garantía cubre los productos a que hace refrencia este manual.
2.2 El presente Certificado de Garantía será de aplicación únicamente en los países de la Unión Europea.
2.3 Para la eficacia de esta garantía, el comprador deberá seguir estrictamente las indicaciones del Fabricante incluidas en la documentación que acompaña al Producto, cuando ésta resulte aplicable según la gama y modelo del Producto.
2.4 Cuando se especifique un calendario para la sustitución, mantenimiento o limpieza de ciertas piezas o componentes del Producto, la garantía sólo será válida cuando se haya seguido dicho calendario correctamente.

3 LIMITACIONES

3.1 La presente garantía únicamente será de aplicación en aquellas ventas realizadas a consumidores, entendiéndose por "consumidor", aquella persona que adquiere el Producto con fines que no entran en el ámbito de su actividad profesional.
3.2 No se otorga ninguna garantía respecto del normal desgaste por uso del producto. En relación con las piezas, componentes y/o materiales fungibles o consumibles como pilas, bombillas etc., se estará a lo dispuesto en la documentación que acompañe al Producto, en su caso.
3.3 La garantía no cubre aquellos casos en que el Producto: (I) haya sido objeto de un trato incorrecto; (II) haya sido reparado, mantenido o manipulado por persona no autorizada o (III) haya sido reparado o mantenido con piezas no originales.
Cuando la falta de conformidad del Producto sea consecuencia de una incorrecta instalación o puesta en marcha, la presente garantía sólo responderá cuando dicha instalación o puesta en marcha esté incluida en el contrato de compra-venta del Producto y haya sido realizada por el vendedor o bajo su responsabilidad.

CERTIFICAT DE GARANTIE

1 ASPECTS GÉNÉRAUX

1.1 Conformément à ces dispositions, le vendeur garantit que le produit correspondant à cette garantie ("le Produit") ne présente aucun défaut de conformité à la date de sa livraison.
1.2 La Période de Garantie pour le Produit est de deux (2) ans et elle sera calculée à partir du moment de sa remise à l'acheteur.
1.3 S'il se produisait un défaut de conformité du Produit et si l'acheteur le notifiait au vendeur pendant la Période de Garantie, le vendeur devrait réparer ou remplacer le Produit à ses propres frais à l'endroit qu'il jugerait opportun, à moins que cela soit impossible ou disproportionné.
1.4 Lorsque le Produit ne pourra être ni réparé ni remplacé, l'acheteur pourra demander une réduction proportionnelle du prix ou, si le défaut de conformité est suffisamment important, la résolution du contrat de vente.
1.5 Les parties remplacées ou réparées en vertu de cette garantie n'élargiront pas le délai de la garantie du Produit original, celles-ci étant cependant couvertes par leur propre garantie.
1.6 Pour l'effectivité de la présente garantie, l'acheteur devra justifier la date d'acquisition et de remise du Produit.
1.7 Quand plus de six mois se seront écoulés depuis la remise du Produit à l'acheteur et que ce dernier alléguera un défaut de conformité de ce Produit, l'acheteur devra justifier l'origine et l'existence du défaut allégué.
1.8 Le présent Certificat de Garantie ne limite pas, ni préjuge les droits correspondant aux consommateurs en vertu des normes nationales de nature impérative.

2 CONDITIONS PARTICULIÈRES

2.1 La présente garantie couvre les produits auxquels ce manuel fait référence.
2.2 Le présent Certificat de Garantie ne sera applicable que dans les pays de l'Union européenne.
2.3 En vue de l'efficacité de cette garantie, l'acheteur devra suivre strictement les indications du Fabricant comprises dans la documentation qui est jointe au Produit, quand celle-ci sera applicable selon la gamme et le modèle du Produit.
2.4 Quand un calendrier sera spécifié pour le remplacement, la maintenance ou le nettoyage de certaines pièces ou de certains composants du Produit, la garantie sera valable uniquement lorsque ledit calendrier aura été suivi correctement.

3 LIMITATIONS

3.1 La présente garantie ne sera applicable que dans les ventes réalisées aux consommateurs, considérant comme "consommateur", toute personne qui achète le Produit à des fins qui n'entrent pas dans le cadre de son activité professionnelle.
3.2 Aucune garantie n'est concédée quant à l'usure normale due à l'utilisation du produit. En ce qui concerne les pièces, composants et/ou matériels fongibles ou consommables comme les piles, les ampoules, etc., il faudra respecter, le cas échéant, ce qui est stipulé dans la documentation qui est jointe au Produit.
3.3 La garantie ne couvre pas les cas où le Produit : (I) a fait l'objet d'un traitement incorrect ; (II) a été réparé, entretenu ou manipulé par une personne non autorisée ou (III) a été réparé ou entretenu avec des pièces n'étant pas d'origine.

Quand le défaut de conformité du Produit sera la conséquence d'une installation ou d'une mise en marche incorrectes, la présente garantie répondra uniquement lorsque ladite installation ou ladite mise en marche sera incluse dans le contrat d'achat et de vente du Produit et aura été réalisée par le vendeur ou sous sa responsabilité.

GARANTIEZERTIFIKAT

1 ALLGEMEINE GESICHTSPUNKTE

1.1 In Übereinstimmung mit diesen Verfügungen garantiert der Verkäufer, dass das Produkt dieser Garantie ("das Produkt") entspricht und dass es im Moment der Übergabe in allen Punkten mit den Anforderungen übereinstimmt.
1.2 Der Garantiezeitraum für das Produkt beträgt zwei (2) Jahre und wird ab dem Augenblick der Lieferung an den Käufer gerechnet.
1.3 Falls ein Mangel am Produkt auftritt und der Käufer den Verkäufer innerhalb des Garantiezeitraums darüber unterrichtet, muss der Verkäufer das Produkt auf eigene Kosten dort reparieren oder ersetzen, wo es für ihn am günstigsten ist, es sei denn, dies ist unmöglich oder unverhältnismäßig.
1.4 Wenn das Produkt weder repariert noch ersetzt werden kann, kann der Käufer einen angemessenen Preisnachlass beantragen, oder, falls es sich um einen größeren Mangel handelt, die Auflösung des Kaufvertrages.
1.5 Die Teile, die aufgrund dieser Garantie ersetzt oder repariert werden, verlängern den Garantiezeitraum für das Originalprodukt nicht. Jedoch existiert für diese Teile eine eigene Garantie.
1.6 Um die vorliegende Garantie wirksam werden zu lassen, muss der Käufer das Kaufdatum und das Lieferdatum des Produktes belegen.
1.7 Nach Ablauf von sechs Monaten ab Lieferung des Produktes an den Käufer muss, im Falle eines Mangels, der Käufer den Ursprung und das Vorhandensein des angegebenen Mangels belegen.
1.8 Das vorliegende Garantiezertifikat schränkt die Rechte, die der Verbraucher aufgrund der herrschenden, nationalen Gesetzgebung hat, nicht ein.

2 SONDERBEDINGUNGEN

2.1 Die vorliegende Garantie gilt für die Produkte, auf die sich dieses Handbuch bezieht.
2.2 Das vorliegende Garantiezertifikat ist nur in den Ländern der Europäischen Gemeinschaft anwendbar.
2.3 Diese Garantie gilt nur, wenn der Käufer alle Anweisungen des Herstellers, die in der produktbegleitenden Dokumentation enthalten und für die jeweilige Produktlinie und Modell anwendbar ist, streng einhält.
2.4 Wenn ein Zeitplan für den Austausch von Teilen, die Instandhaltung und Reinigung bestimmter Teile oder Produktkomponenten aufgestellt wurde, gilt die Garantie nur dann, wenn dieser Zeitplan korrekt eingehalten wurde.

3 EINSCHRÄNKUNGEN

3.1 Die vorliegende Garantie ist nur auf Verkäufe an Verbraucher anwendbar. "Verbraucher" sind alle Personen, die dieses Produkt zu privaten Zwecken erwerben.
3.2 Es wird keine Garantie für die normale Abnutzung durch den Gebrauch des Produktes gewährt. Informationen über Teile, Komponenten und/oder verschleißbare Materialien oder Verbrauchsgüter oder Batterien, Glühbirnen etc. finden Sie in der Dokumentation, die das jeweilige Produkt begleitet.
3.3 In folgenden Fällen gilt die Garantie nicht: (I) Das Produkt wurde nicht korrekt benutzt; (II) das Produkt wurde von nicht autorisierten Personen repariert, instandgehalten oder bedient oder (III) das Produkt wurde mit nicht originalen Ersatzteilen repariert oder instandgehalten.
Wenn der Mangel auf eine falsche Installation oder Inbetriebnahme zurückzuführen ist, gilt die vorliegende Garantie nur, wenn diese Installation oder Inbetriebnahme in den Kaufvertrag des Produktes eingeschlossen war, und von dem Verkäufer oder auf dessen Verantwortung durchgeführt wurde.

CERTIFICATO DI GARANZIA

ASPETTI GENERALI

Ai sensi delle seguenti disposizioni, il venditore garantisce che il prodotto corrispondente a questa garanzia ("il Prodotto") non presenta alcun difetto di conformità al momento della sua consegna.
Il Periodo di Garanzia per il Prodotto è di due (2) anni a decorrere dal momento della consegna dello stesso all'acquirente.
Nel caso in cui si venisse a produrre un difetto di conformità del Prodotto e l'acquirente lo notificasse al venditore entro il Periodo di Garanzia, il venditore dovrà riparare o sostituire il Prodotto a sue spese nel luogo che consideri opportuno, salvo che ciò risulti impossibile o sproporzionato.
Qualora non fosse possibile riparare o sostituire il Prodotto, l'acquirente potrà richiedere una riduzione proporzionale del prezzo o, nel caso in cui il difetto di conformità fosse sufficientemente importante, lo scioglimento del contratto di vendita.
Le parti sostituite o riparate in virtù della presente garanzia non rappresenteranno un prolungamento della scadenza della garanzia del Prodotto originale, quantunque disporranno di una loro propria garanzia.
Affinché la presente possa essere valida, l'acquirente dovrà attestare la data di acquisto e consegna di del Prodotto.
Una volta trascorsi più di sei mesi dalla consegna del Prodotto all'acquirente, qualora quest'ultimo dichiari un difetto di conformità del medesimo, l'acquirente dovrà attestare l'origine e l'esistenza del difetto dichiarato.
Il presente Certificato di Garanzia non limita o preclude i diritti che corrispondano ai consumatori in virtù delle norme nazionale di carattere imperativo.

CONDIZIONI PARTICOLARI

La presente garanzia copre i prodotti al quali si riferisce questo manuale.
Il presente Certificato di Garanzia avrà vigore unicamente nell'ambito dei paesi dell'Unione Europea.
Per la validità di questa garanzia, l'acquirente dovrà rispettare in maniera rigorosa le indicazioni del Fabbricante indicate nella documentazione che viene allegata al Prodotto, quando questa risulti applicabile secondo la gamma e il modello del Prodotto.
Nel caso in cui venga specificato un calendario per la sostituzione, la manutenzione o la pulizia di determinati pezzi o componenti del Prodotto, la garanzia sarà valida solo quando qualora detto calendario sia stato rispettato in maniera corretta.

LIMITAZIONI

La presente garanzia sarà valida unicamente per le vendite realizzate a consumatori, laddove per "consumatori" s'intende quella persona che acquista il Prodotto con scopi che non rientrano nell'ambito della sua attività professionale.
No viene concessa alcuna garanzia nei riguardi del normale consumo per uso del prodotto. In merito ai pezzi, ai componenti e/o ai materiali fusibili o consumabili come pile, lampadine, ecc., ove sussista si applicherà quanto disposto nella documentazione che è allegata al Prodotto.
La garanzia non copre i casi in cui il Prodotto: (I) sia stato oggetto di un uso non corretto; (II) sia stato riparato, manipolato o la manutenzione sia stata effettuata da una persona non autorizzata o (III) sia stato riparato o la manutenzione sia stata effettuata con pezzi non originali.
Qualora il difetto di conformità del Prodotto sia conseguenza di una installazione o messa in marcia non corretta, la presente garanzia risponderà solo nel caso in cui la suddetta installazione o messa in marcia sia compresa nel contratto di compravendita del Prodotto e sia stata realizzata dal venditore o sotto la sua responsabilità.

GARANTIECERTIFIKAAT

1 ALGEMENE ASPEKTEN

1.1 In overeenkomst met de voorliggende bepalingen wordt door de verkoper gegarandeerd dat het produkt verkocht onder deze garantie ("het Produkt") geen enkel defekt vertoont op het moment van levering.
1.2 De Garantieperiode voor het Produkt bedraagt twee (2) jaar en is geldig vanaf het moment dat het Produkt aan de koper geleverd wordt.
1.3 Indien er zich een defekt aan het Produkt zou voordoen en de koper dit zou mededelen aan de verkoper gedurende de geldige Garantieperiode, dan zal de verkoper het Produkt repareren of laten repareren op zijn eigen kosten alwaar de verkoper dit geschikt zou achten, behalve in het geval dat dit onmogelijk of buitensporig zou zijn.
1.4 Indien het Produkt niet gerepareerd of vervangen kan worden, dan kan de koper na verhouding prijsreduktie aanvragen, of, indien het defekt belangrijk genoeg is, de ontbinding van het verkoopcontract aanvragen.
1.5 Die delen van het Produkt die onder deze Garantie vervangen of gerepareerd zijn, kunnen de duur van de Garantieperiode voor het oorspronkelijke Produkt niet verlengen, maar zullen beschikken over een eigen garantie.
1.6 Voor de toepassing van deze garantie moet de koper de aankoopdatum en de levering van het Produkt kunnen aantonen.
1.7 Indien er meer dan zes maanden verlopen zijn sinds de levering van het Produkt aan de koper, en deze plotseling aangeeft dat het Produkt niet aan de eisen voldoet, dan zal de koper de oorsprong en het bestaan van de volgens hem bestaande defekten moeten kunnen aantonen.
1.8 Dit Garantiecertifikaat beperkt of veroordeelt niet bij voorbaat de rechten die de gebruikers hebben en die gebaseerd zijn op nationale normen.

2 BIJZONDERE VOORWAARDEN

2.1 Deze garantie dekt de produkten waarnaar deze handleiding verwijst.
2.2 Het huidige Garantiecertifikaat is slechts van toepassing in landen van de Europese Unie.
2.3 Voor de toepassing van deze garantie en in geval deze garantie van toepassing is al naar gelang de serie en het model van het Produkt, moet de koper de aanwijzingen van de Fabrikant in de documenten die bij het Produkt bijgesloten zijn, strikt opvolgen.
2.4 Indien er een tijdsperiode vastgesteld wordt voor de vervanging, het onderhoud of het reinigen van verschillende delen of onderdelen van het Produkt, dan is de garantie alleen geldig in geval deze tijdsperiode strikt aangehouden is.

3 BEPERKINGEN

3.1 De huidige garantie is uitsluitend geldig bij verkoop aan gebruikers, waarbij onder "gebruiker" verstaan wordt een persoon die het Produkt aanschaft met een doel dat niet binnen het gebied van zijn professionele activiteiten valt.
3.2 Er bestaat geen garantie in verband met normale slijtage bij gebruik van het Produkt. Wat betreft de delen, componenten en/of vervangbare of verbruiksmaterialen zoals batterijen, gloeilampen, enz. zal men zich moeten richten naar hetgeen in de documenten staat die het Produkt vergezellen.
3.3 De garantie dekt niet de gevallen waarbij het Produkt (i) onderhevig is geweest aan ongepast gebruik, (ii) gerepareerd, onderhouden of gemanipuleerd is door een persoon die daarvoor geen toestemming heeft, of (iii) gerepareerd of onderhouden is met niet oorspronkelijke onderdelen. Indien het defekt van het Produkt het gevolg is van een incorrecte installering of ingebruikneming, dan is deze garantie slechts van toepassing indien de installering of ingebruikneming in kwestie in het contract van koop en verkoop van het produkt opgenomen is en door de verkoper of onder diens verantwoording uitgevoerd is.

CERTIFICADO DE GARANTIA

1 CONDIÇÕES GERAIS

1.1 De acordo com estas disposições, o vendedor garante que, no momento da entrega, o produto correspondente a esta garantia ("o Produto") não apresenta nenhum tipo de falta de conformidade.

1.2 O Período de Garantia para o Produto é de dois (2) anos, contados a partir da data de entrega ao comprador.

1.3 Se, durante o período de garantia, o comprador notificar ao vendedor alguma falta de conformidade do Produto, o vendedor deverá reparar ou substituir o Produto por sua conta no lugar onde considerar conveniente, salvo que isso seja impossível ou desmesurado.

1.4 Quando não for possível reparar ou substituir o Produto, o comprador poderá solicitar uma redução proporcional do preço ou, se a falta de conformidade for o suficientemente grave, a rescisão do contrato de venda.

1.5 As partes substituídas ou reparadas em virtude desta garantia não ampliarão o período de garantia do Produto original, mas disporão da sua própria garantia.

1.6 Para que a presente garantia tenha efeito, o comprador deverá apresentar o comprovante da data de compra e de entrega do Produto.

1.7 Se o comprador alegar uma falta de confomidade do Produto, passados mais de seis meses da data de entrega do mesmo, deverá demonstrar a origem e a existência do defeito alegado.

1.8 O presente Certificado de Garantia não limita nem afecta os direitos dos consumidores derivados das normas nacionais de carácter imperativo.

2 CONDIÇÕES PARTICULARES

2.1 A presente garantia cobre os produtos descritos neste manual.

2.2 O presente Certificado de Garantia só sera válido nos países da União Europeia.

2.3 Para a eficácia desta garantia, o comprador deverá seguir rigorosamente as indicações do Fabricante contidas na documentação fornecida com o Produto, quando a mesma for aplicável em função da gama e do modelo do Produto.

2.4 No caso de se estabelecer um calendário para a substituição, manutenção ou limpeza de determinadas peças ou componentes do Produto, a garantia só será válida se o citado calendário tiver sido cumprido rigorosamente.

3 LIMITAÇÕES

3.1 A presente garantia só será válida para as vendas realizadas a consumidores, entendendo-se por "consumidor" a pessoa que comprar o Produto com fins não abrangidos no âmbito da sua actividade profissional.

3.2 A garantia não cobre o desgaste normal derivado do uso do produto. Em relação às peças, componentes e/ou materiais fungíveis ou consumíveis como pilhas, lâmpadas, etc., terá efeito o disposto na documentação fornecida com o Produto, em cada caso.

3.3 Esta garantia não abrange as seguintes situações: (I) Se o Produto tiver sido objecto de um uso incorrecto; (II) tiver sido reparado, sofrido manutenção ou manipulado por pessoas não autorizadas ou (III) tiver sido reparado ou as suas peças substituídas por peças não originais.

Quando a falta de conformidade do Produto for consequência de uma instalação ou colocação em funcionamento incorrecta, a presente garantia só será válida se a referida instalação ou colocação em funcionamento estiver incluída no contrato de compra-venda do Produto e tiver sido realizada pelo vendedor ou sob sua responsabilidade.

In order to reduce the amount of waste of electric and electronic apparatus, to reduce the danger of components, to encourage the reuse of apparatus, to assess waste and to set up a suitable waste treatment system, with the aim of improving the efficiency of environmental protection, a set of rules has been established applicable to the manufacture of the product and other rules regarding the correct environmental treatment when these products become waste.

It is also intended to improve the environmental practices of all agents involved in electrical and electronic goods, including manufacturers, distributors, users and particularly those directly involved in the treatment of waste derived from these apparatus.

From 13th August 2005, there are two ways of disposing of this apparatus:

- if you purchase a new equivalent apparatus or which has the same functions as the one you wish to dispose of, you can hand it over, free of charge, to the distributor when making your purchase, or
- you can take it to local collection points.

We shall cover waste treatment costs.

The apparatus are labelled with a symbol of a "crossed-out waste container". This symbol means that the apparatus is subject to selected waste collection, different from general waste collection.

Our products are designed and manufactured with top-quality, environmental-friendly materials and components, which can be reused and recycled. In spite of this, several parts of this product are not biodegradable and therefore it should not be left in the environment. For the correct recycling of this product, please completely detach the electrical motor from the rest of the filtration equipment.

Con objeto de reducir la cantidad de residuos de aparatos eléctricos y electrónicos, la peligrosidad de los componentes, fomentar la reutilización de los aparatos, la valorización de sus residuos y determinar una gestión adecuada tratando de mejorar la eficacia de la protección ambiental, se establecen una serie de normas aplicables a la fabricación del producto y otras relativas a la correcta gestión ambiental cuando se conviertan en residuo.

Así mismo, se pretende mejorar el comportamiento ambiental de todos los agentes que intervienen en el ciclo de vida de los aparatos eléctricos y electrónicos, como son los productores, los distribuidores, los usuarios y en particular, el de aquellos agentes directamente implicados en la gestión de los residuos derivados de estos aparatos.

A partir del 13 Agosto de 2005 cuando usted quiera desechar este aparato, tiene dos posibles sistemas de devolución:

- si adquiere uno nuevo que sea de tipo equivalente o realice las mismas funciones que el que desecha, podrá entregarlo, sin coste, en el acto de la compra al distribuidor
- podrá llevarlo al sitio que destinen las diferentes entidades locales.

Nosotros nos haremos cargo de los costes de gestión.

Los aparatos van etiquetados con el símbolo de un "contenedor de basura con ruedas tachado", este símbolo es indicativo de la necesaria recogida selectiva y diferenciada del resto de las basuras urbanas.

Nuestros productos están diseñados y fabricados con materiales y componentes de alta calidad, respetuosos con el medio ambiente, que pueden ser reutilizables y reciclados. Aun así, las diferentes partes que componen este producto no son biodegradables, por lo que no se deben abandonar en el medio ambiente. Se debe de reciclar por separado, para ello separar el motor eléctrico del resto del equipo de filtración.

Afin de réduire la quantité de déchets d'appareils électriques et électroniques, afin d'éviter le danger de leurs composants, d'encourager la réutilisation des appareils ainsi que la valorisation de leurs déchets, et de déterminer une gestion appropriée de ceux-ci, en essayant d'améliorer l'efficacité de la protection environnementale, ont été établies de nombreuses normes applicables à la fabrication du produit, et d'autres relatives à la gestion environnementale correcte lorsque ces appareils sont hors service.
De même, on prétend améliorer le comportement environnemental de toutes les personnes qui interviennent dans le cycle de vie des appareils électriques et électroniques, tels que les producteurs, les distributeurs, les utilisateurs et, en particulier, les intervenants directement impliqués dans la gestion des déchets dérivés de ces appareils.
À partir du 13 août 2005, quand vous souhaitez vous débarrasser de votre appareil usagé, vous avez deux façons de vous en défaire :

- si vous achetez un nouvel appareil qui est plus ou moins du même genre ou qui réalise les mêmes fonctions que votre appareil usagé, vous pourrez le remettre au distributeur, sans aucun frais à votre charge, au moment de l'achat
- ou bien vous pourrez le déposer à l'endroit destiné à cette fin par les différents organismes locaux.

Les frais de gestion seront à notre charge.
Les appareils portent une étiquette sur laquelle figure le symbole d'une "poubelle à ordures sur roulettes barrée". Ce symbole indique la nécessité d'une collecte sélective et triée du reste des déchets urbains.

Nos produits sont conçus et fabriqués avec des matériaux et des composants de haute qualité, respectueux de l'environnement, qui sont réutilisables et recyclables. Malgré tout, les différentes parties qui composent cet article ne sont pas biodégradables ; c'est pourquoi, il ne faut pas les mettre au rebut en les jetant dans l'environnement.

Um die Menge an Abfällen, die aus elektrischen und elektronischen Geräten bestehen, zu reduzieren, die Gefahr einzudämmen, die Wiederverwertung der Apparate und die Bewertung dieser Rückstände zu fördern und ein geeignetes Management zu finden, um die Wirksamkeit des Umweltschutzes zu erhöhen, werden eine Reihe von Normen festgelegt, die auf die Herstellung des Produktes angewandt werden, und Normen, die sich auf die korrekte und umweltbewusste Entsorgung beziehen, wenn diese Produkte zu Abfall werden.
Ebenso soll das Umweltbewusstsein aller Beteiligten verbessert werden, die mit den elektrischen und elektronischen Apparaten während deren gesamtem Nutzungszyklus in Kontakt kommen, das sind zum Beispiel die Hersteller, die Vertreiber, die Benutzer und insbesondere diejenigen, die direkt mit der Entsorgung der Rückstände zu tun haben, die durch diese Apparate entstehen.
Ab dem 13. August 2005 gibt es zwei Möglichkeiten für die Rückgabe, wenn Sie diesen Apparat entsorgen möchten:

- Falls Sie einen neuen, ähnlichen Apparat oder einen, der den gleichen Funktionen dient, erwerben, können Sie das alte Gerät kostenlos beim Kauf des neuen Gerätes an Ihren Verkäufer zurückgeben.
- Oder Sie können den Apparat zu einer der öffentlichen Annahmestellen für diese Art von Sondermüll bringen.

Wir übernehmen die Kosten der Entsorgung.
Die Apparate sind mit einem Etikett mit dem Symbol eines „durchgestrichenen Abfallcontainers mit Rädern" versehen. Dieses Symbol gibt an, dass es sich um Sondermüll handelt, und nicht um gewöhnlichen städtischen Müll.

Unsere Produkte bestehen aus Materialien und Komponenten hoher Qualität, die umweltfreundlich sind und wieder benutzt oder recycelt werden können. Dennoch sind die verschiedenen Teile, aus denen dieses Produkt besteht, nicht biologisch abbaubar, deshalb können sie nicht einfach weggeworfen werden. Um dieser Produkt korrekt zu recycling, bitte den elektrischen Motor von der Filteranlage zerlegen.

Allo scopo di ridurre la quantità di residui di apparati elettrici ed elettronici, la pericolosità dei componenti, promuovere il riutilizzo degli apparecchi, la valutazione dei loro residui e determinare una gestione adeguata cercando di migliorare l'efficacia della protezione ambientale, si stabiliscono una serie di norme applicabili alla fabbricazione del prodotto ed altre relative alla corretta gestione ambientale quando si trasformino in residui.
Allo stesso modo, si cerca di migliorare il comportamento ambientale di tutti gli agenti che intervengono nel ciclo vitale degli apparecchi elettrici ed elettronici, come i produttori, i distributori, i consumatori e, in particolare, il comportamento di quegli agenti direttamente implicati nella gestione dei residui derivati da questi apparecchi.
A partire dal 13 agosto del 2005, quando vorrà disfarsi di questo apparecchio, avrà due possibili sistemi di rottamazione a sua disposizione:

- se acquista un apparecchio uovo che sia di tipo equivalente o che svolga le stesse funzioni di quello da rottamare, potrà consegnarlo direttamente al distributore, senza alcun costo, al momento dell'acquisto;
- potrà portarlo nel luogo appositamente destinato dai vari enti locali.

Noi ci faremo carico dei costi di gestione.
Gli apparecchi sono etichettati con il simbolo di un "contenitore della spazzatura, sbarrato", questo simbolo indica la necessaria raccolta selettiva e differenziata dal resto della spazzatura urbana.

I nostri prodotti sono progettati e fabbricati con materiali e componenti di elevata qualità, che rispettano l'ambiente, che possono essere riutilizzati e riciclati. Pur in questo caso, le varie parti che compongono questo prodotto non sono biodegradabili, per cui non devono essere abbandonate nell'ambiente. Per il riciclaggio corretto di questo prodotto, stacchi il motore dal resto dell'apparecchio di filtrazione

---

Teneinde het afval afkomstig van elektrische en elektronische apparaten en de schadelijke effecten van de diverse onderdelen te verminderen, het hergebruik van apparaten en de evaluatie van de effecten van het afval te bevorderen, en een gepast beheer en de bescherming van het milieu te bevorderen, zijn een aantal regels vastgesteld aangaande de fabricage van dit product alsmede de correcte milieubewuste verwerking van het apparaat wanneer het eenmaal wordt afgevoerd.

Bovendien is het de bedoeling de milieubewuste verwerking door alle agenten die bij de gebruikscyclus van de elektrische en elektronische apparaten betrokken zijn te verbeteren, zoals bijvoorbeeld leveranciers, distributeurs, gebruikers, en in het bijzonder de agenten die direct betrokken zijn bij de verwerking van het afval afkomstig van deze apparaten.
Met ingang van 13 augustus 2005 kunt u uit twee mogelijkheden kiezen wanneer u dit apparaat wilt weggooien:

- wanneer u een nieuw exemplaar aanschaft van een vergelijkbaar type of dat dezelfde functies verricht als het weg te gooien exemplaar, kunt u het oude exemplaar zonder kosten bij de distributeur inleveren bij de aankoop van het nieuwe
- of u kunt het naar de afvalverwerking brengen volgens de voorschriften van de lokale overheid.

Wij zullen de kosten van deze handelingen op ons nemen.
De apparaten zijn voorzien van een etiket met het symbool van “een doorgestreepte afvalcontainer met wielen”; dit symbool geeft aan dat het apparaat niet met het gewone afval gemengd en apart verwerkt moet worden.

Onze producten zijn ontworpen en gefabriceerd op basis van materialen en onderdelen van hoge kwaliteit die het milieu ontzien en die hergebruikt en gerecycled kunnen worden. Desondanks zijn de diverse onderdelen van dit product niet biologisch afbreekbaar, zodat deze niet in het milieu achtergelaten mogen worden. Om dit produkt korrekt te recyclen, relieve de elektrische motor van de Filterset los maken

---

Com o objectivo de reduzir a quantidade de resíduos dos equipamentos eléctricos e electrónicos, a perigosidade dos componentes, fomentar a reutilização dos equipamentos, a valorização dos seus resíduos e determinar uma gestão adequada tratando de melhorar a eficácia da protecção ambiental, estabelece-se uma série de normas aplicáveis ao fabrico do produto e outras relativas à correcta gestão ambiental quando se transformam em resíduos.
Do mesmo modo, pretende-se melhorar o comportamento ambiental de todos os agentes que intervêm no ciclo de vida dos equipamentos eléctricos e electrónicos, como são os produtores, os distribuidores, os utilizadores e, em particular, o dos agentes directamente implicados na gestão dos resíduos derivados destes equipamentos.
A partir do dia 13 Agosto de 2005, quando quiser desfazer-se deste aparelho, tem duas possibilidades de devolução:

- se adquirir um novo aparelho que seja de tipo equivalente ou que realize as mesmas funções que o que está a deitar fora, poderá entregá-lo ao distribuidor, sem custo, no acto da compra;
- poderá levá-lo ao local destinado pelas diferentes entidades locais.

Nós assumiremos os custos de gestão.
Os equipamentos são rotulados com o símbolo de um “contentor de lixo com rodas barrado com uma cruz”, que indica a necessidade de recolha selectiva e diferenciada do resto dos lixos urbanos.

Os nossos produtos são concebidos e fabricados com materiais e componentes de alta qualidade, respeitadores do ambiente, que podem ser reutilizados e reciclados. No entanto, as diferentes partes que compõem este produto não são biodegradáveis e, portanto, não devem ser abandonadas no meio ambiente. Para a reciclagem correta deste equipamento, por favor separe o motor electrico do resto do aparelho de filtração.

METALAST, S. A. U.
Passeig Sanllehy, 25 E-08213 Polinyà (Spain)

E	PRODUCTOS:	NL	PRODUKTEN:
GB	PRODUCTS:	S	PRODUKTER:
D	PRODUKTE:	N	PRODUKTER:
F	PRODUITS:	DK	PRODUKTER:
I	PRODOTTI:	SF	TOUTTEET:
P	PRODUTOS	GR	ΠΡΙΟΝΤΑ:

MONOBLOC - FILTER

AR700, AR7050, AR710, AR715

DECLARACION **DE CONFORMIDAD**
Los productos arriba enumerados se hallan conformes con:
Directiva de seguridad de máquinas 98/37/CEE,
Directiva de compatibilidad electromagnética 2004/108/CE, y sus modificaciones.
Directiva de equipos de baja tensión 2006/95/CE, Normativa Europea EN 60335-2-41. ROHS 20002/95CE

CONFORMITEITSVERKLARING
Bovenstaande produkten voldoen aan de veiligheidsvoorschriften van de Richtlijn 98/37/EEG voor Machines, de Richtlijn 2004/108/CE voor electromagnetische verenigbaarheid, de Richtlijn2006/95/CE voor laagspanning en aan de Europese Standaard EN 60335 - 2 - 41. ROHS 20002/95CE

DECLARATION OF CONFORMITY
The products listed above are in compliance with the safety prescriptions of the Machinery Directive 98/37/EEC, Electromagnetic Compatibility Directive2004/108/CE and its modifications, Low Voltage Directive 2006/95/CE and the European Standard EN 60335 - 2 - 41. ROHS 20002/95CE

FÖRSÄKRAN OM ÖVERENSSTÄMMELSE
Ovanstående produkter är i överensstämmelse med villkoren i maskindirektiv 98/37/EU, direktiv för elektromagnetisk spänning 2004/108/CE och dess modifikationer, lågspännigsdirektiv 2006/95/CE samt europeisk standard EN 60335 - 2 - 41. ROHS 20002/95CE

KONFORMITÄTSERKLÄRUNG
Die oben angeführten Produkte entsprechen den Sicherheitsbestimmungen der Maschinenrichtlinien 98/37/EG, der Richtlinie der elektromagnetischen Kompatibilität 2004/108/CE und deren Änderungen, der Niederspannungs-Richtlinien 2006/95/CE und der europäischen Vorschrift
EN 60335 - 2 - 41. ROHS 20002/95CE

KONFORMITETSERKLÆRING
Ovennevnte produkter oppfyller sikkerhetskravene i Direktiv for maskiner 98/37/CEE, Direktiv for elektromagnetisk kompatibilitet2004/108/CE med endringer. Direktiv for lavspenningsapparater 2006/95/CE. Europeisk standard EN 60335-2-41. ROHS 20002/95CE

DÉCLARATION DE CONFORMITÉ
Les produits énumérés ci-dessus sont conformes aux prescriptions de sécurité de la Directive Machines 98/37/CEE, de la Directive de compatibilité électromagnétique 2004/108/CE, et ses modifications, de la Directive Appareils Basse Tension 2006/95/CE et à la Norme Européenne EN 60335 - 2 - 41. ROHS 20002/95CE

OVERENSSTEMMELSESERKLÆRING
Ovenstående produkter opfylder bestemmelserne i Sikkerhedsdirektiv for maskineri 98/37/EWG, Direktiv for elektromagnetisk forenelighed2004/108/EWG og dets ændringer, Direktiv for lavspænding 2006/95/EWG samt europæisk standard EN 60335 - 2 - 41. ROHS 20002/95EWG

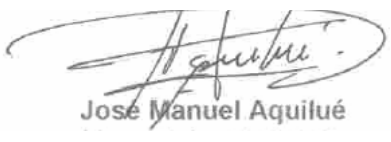
DICHIARAZIONE DI CONFORMITÀ
I prodotti su elencati sono conformi al quanto segue:
Direttiva di Sicurezza della Macchine 98/37/CEE, Direttiva di Compatibilità Elettromagnetica 2004/108/CE e relative modifiche, Direttiva Bassa Tensione 2006/95/CE, Norma europea EN 60335 - 2 - 41. ROHS 20002/95CE

VAATIMUSTENMUKAISUUSVAKUUTUS
Yllämainitut tuotteet täyttävät EU:n konedirektiivin 98/37/ETY, sähkömagneettisten laitteiden yhteensopivuusdirektiivin (EMC) 2004/108/CE ja siihen liittyvät muutokset, pienjännitedirektiivin 2006/95/CE, sekä eurooppalaiset standardit EN 60335 - 2 – 41. ROHS 20002/95CE

DECLARAÇÃO DE CONFORMIDADE
Os produtos da lista acima estão conformes as:
Directiva de segurança de máquinas 98/37/CEE, Directiva de compatibilidade electromagnética2004/108/CE e respectivas modificações, Directiva de Baixa Tensão2006/95/CE, Norma europeia EN 60335 - 2 -41. ROHS 20002/95CE

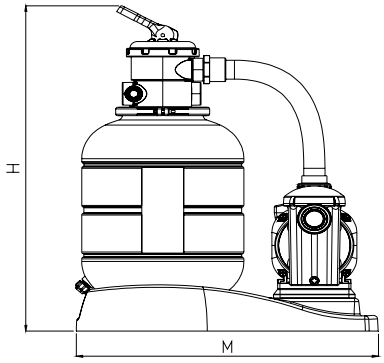
ΔΗΛΩΣΗ ΣΥΜΒΑΤΟΤΗΤΑΣ
Τα παραπάνω προϊόντα είναι σύμφωνα με την: Οδηγία περί ασφαλείας μηχανημάτων 98/37/ΕΟΚ, Οδηγία περί ηλεκτρομαγνητικής συμβατότητας 2004/108/CE, και οι αλλαγές τους. Οδηγία περί συσκευών χαμηλής τάσης 2006/95/CE, και τον Ευρωπαϊκό Κανονισμό EN 60335 –2-41. ROHS 20002/95CE

Firma / Cargo:	Handtekening / Hoedanigheld:
Signature / Qualification:	Namnteckning / Befattning:
Unterschrift / Qualifizierung:	Underskrift / Stilling:
Signature / Qualification:	Signatur / Tilstand:
Firma / Qualifica:	Allekirjoitus / Virka-asema:
Assinatura / Título:	Υπγραψη / Θευη:



Gerente de Metalast / Manager of Metalast /25-10-2007

- **TECHNICAL CHARACTERISTICS**
- **CARACTERISTICAS TECNICAS**
- **CARACTERISTIQUES TECHNIQUES**
- **TECHNISCHE ANGABEN**
- **DATI TECNICI**
- **TECHNISCHE GEGEVENS**
- **CARACTERISTICAS TECNICAS**



IF YOU HAVE ANY PROBLEM, CONTACT US! (UK Green Number)	0800 91 76 778
SI TIENE ALGÚN PROBLEMA, ¡CONSÚLTENOS! EM CASO DE PROBLEMA, ¡CONSULTAR-NOS!	+34 946 741 844
EN CAS DE PROBLEME, NOUS CONSULTER ! France Tel Belgique numéro verde Suisse numéro verde Nederlands	 +33 0892 707 720 0800 10 211 0 800/563 820 0800 022 33 04
BEI PROBLEMEN KÖNNEN SIE SICH MIT UNS UNTER DER FOLGENDEN DEUTSCHEN Deutchland Österreich Schweiz freie Nummer	 0180 333 0123 +49 180 333 0123 0 800/563 820
PER OGNI VOSTRA EVENTUALLE OCCORRENZA, INTERPELLA-TECI! Italia Suizzera numero verde	 800 781 592 0 800/563 820
MOCHT U EEN PROBLEEM HEBBEN, … ¡RAADPLEEG ONS! Nederlands Belgie	 0800 022 33 04 0800 10 211

	AR700	AR700C	AR7050	AR7050C	AR710	AR710C	AR715	AR715C
∅ Filter / ∅ Filtre / ∅ Filtro / ∅ Filtro / ∅ Sandfilter / ∅ Sandfilter / ∅ Filtro	**300mm**		**300 mm**		**380 mm**		**430 mm**	
H	**600 mm**		**600 mm**		**850 mm**		**935 mm**	
M	**520 mm**		**520 mm**		**719 mm**		**719 mm**	
Flow rate / Caudal / Débit / Durchflubmenge / Portata / Debiet / Caudal	**4 m^3/h.**	**3,5 m^3/h.**	**6 m^3/h.**	**3,5 m^3/h.**	**8 m^3/h.**	**5,5 m^3/h.**	**10 m^3/h.**	**7,25 m^3/h.**
Filtering speed / Velocidad de filtración / Vitesse de filtrage / Filtriergeschwindigkeit / Velocità filtrazione / Filtersnelheid / Velocidade de filtragem	**56,61 m^3/m^2h**	**50 m^3/m^2h**	**84.92 m^3/m^2h**	**50 m^3/m^2h**	**70.57 m^3/m^2h**	**50 m^3/m^2h**	**68.89 m^3/m^2h**	**50 m^3/m^2h**
Potency / Potencia / Puissance / Stromstärke / Potenza / Vermogen / Potência	**260 W**		**480 W**		**630 W**		**790 W**	
Voltage / Voltaje / Voltage / Spannung / Voltaggio / Voltagem / Voltage	**230 V 50 Hz**							
Sand filling / Carga de arena / Charge du sable / Sandladung / Carico di sabbia / Zandlading / Carga de areia	**25 Kg**		**25 Kg**		**40 Kg**		**70 Kg**	
Supplied sand / Arena suministrada / Sable livré / Gelieferte Sandmenge / Sabbia fornita / Meegeleverde zand / Areia fornecida	**1 x 25 Kg**		**1 x 25 Kg**		**2 x 25 Kg**		**3 x 25 Kg**	
Grain size / Granulometría / Granulométrie / Körnung / Granulometria / Korrelgroottemeting / Granulometria	**0,4-0,8 mm.**							

WE RESERVE THE RIGHT TO CHANGE ALL OF PART OF THE FEATURES OF THE ARTICLES OR CONTENTS OF THIS DOCUMENT, WITHOUT PRIOR NOTICE.

NOS RESERVAMOS EL DERECHO DE CAMBIAR TOTAL O PARCIALMENTE LAS CARACTERÍSTICAS DE NUESTROS ARTÍCULOS O CONTENIDO DE ESTE DOCUMENTO SIN PREVIO AVISO

NOUS NOUS RÉSERVONS LE DROIT DE MO0DIFIER TOTALEMENT ORU EN PARTIE LES CARACTERISTIQUESDE NOS ARTICLES OU LE CONTENU DE CE DOCUMENT SAN PREÉ AVIS

WIR BEHALTEN UNS DAS RECHT VOR DIE EIGENSCHAFTEN UNSERER PRODUKTE ODER DEN INHALT DIESES PROSPECTES TEILWEISE ODER WOLLSTANDING, OHNE VORHERIGE BENACHICHTIGUNG SU ANDEM

CI RISERVAMO IL DIRITTO DI CAMBIARE TOTALEMENTE O PARZIALMENTE LE CARATTERISTICHE TECNICHE DEI NOSTRI PRODOTTI ED IL CONTENUTO DI QUESTO DOCUMENTO SENZA NESSUM PREAVVISO

WIJ BEHOUDEN ONS HET RECHT VOOR GEHEEL OF GEDEELTELIJK DE KENMERKEN VAN ONZE ARTIKELEN OF DE INHOUK VAN DEZE HANDLEIDING ZONDER VOORAFGAAND BERICHT TE WIJZIGEN

RESERVAMO-NOS NO DEREITO DE ALTERAR, TOTAL OU PARCIALMENTE AS CARACTERÍSTICAS DOS NOSSOS ARTIGOS OU O CONTÚDO DESTE DOCUMENTO SEM AVISO PRÉVIO

DISTRIBUIDO POR :
MANUFACTURAS GRE S.A.
C/ ARITZBIDEA Nº 57, BARRIO TROBIKA
48100 MUNGIA (BIZKAIA) ESPAÑA.
TEL. 34 946741116 FAX. 34 946741708
http://www.gre.es
Nº REG. IND.:48-06762

FABRICADO POR:
C.I.F. A-08246274

AURICPOOL METALAST

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

PRODUCT VERIFICATION

CE FILE

ANNEX: LABELS

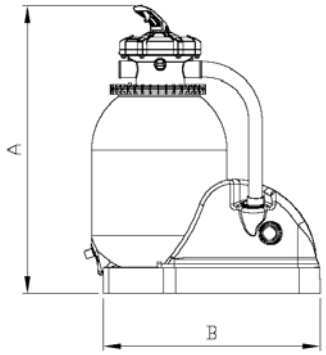
PRODUCT: **Monoblock filter AR-700**

REFERENCE: **Various**

DATE: **September 2009**

MANUFACTURER: **METALAST S.A.U.**
Passeig Sanllehy 25
08213 POLINYA
BARCELONA
SPAIN

This document contains the labels to be placed on the product. The document contains 3 pages



Manufacturas GRE S.A.
Aritz Bidea n.57, Barrio Trobika, Apartado 69, E-48100 Mungia, Spain

AR-700C

TECHNICAL CHARACTERISTICS – CARACTERISTICAS TECNICAS – CARACTERISTIQUES TECHNIQUES

A		600 mm.
B		520 mm.
Filter diameter / Diámetro filtro / Diamètre filtre		300 mm.
Flow / Caudal / Débit		3,5 m3/h
Filtering speed / Velocidad de filtración / Vitesse de filtrage		50 m^3/ m^2.h
Sand / Arena / Sable		25 Kg.
Granule / Granulometría /Granulométrie		0,4-0,8 mm.
260 W	**230V ~50Hz**	CE
IP-X4 Ins. Class 155 S1	**T_{media}max 35ºC**	

WARNING
- Read this manual thoroughly before installing the filter and carefully follow the instructions during installation and use.
- Place the filter on a flat, solid surface at a minimum distance of 3.5 metres from the pool
- The appliance should be connected to a voltage of 230 V alternating current and 50 Hz power point, with earth connection, protected by a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.
- It is essential that you use a multiple disconnection device with a space of at least 3 mm between surfaces to disconnect the filter from the electrical current.

ATENCIÓN
- Lea atentamente este manual antes de instalar el equipo y siga meticulosamente las indicaciones durante la instalacion del mismo y durante su uso.
- Colocar el equipo sobre una superficie plana y sólida, a una distancia no inferior a 3,5 metros de la piscina
- El equipo se debe conectar a una toma de tensión de 230 V de corriente alterna y 50 Hz, con conexión a tierra, protegida con un interruptor diferencial (RCD) con una corriente de funcionamiento residual asignada que no exceda de 30 mA
- Es imprescindible utilizar un dispositivo de desconexión múltiple con una separación mínima de 3 mm entre contactos para desconectar el filtro de la alimentación eléctrica.

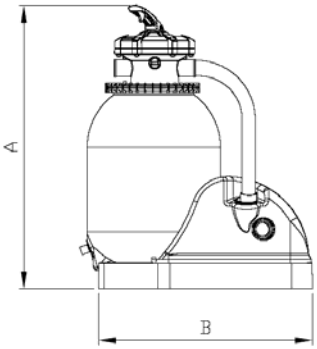
ATTENTION
- Lisez attentivement ce manuel avant d'installer le filtre et suivez méticuleusement les indications pendant son installation et son utilisation.
- Placer le filtre sur une surface plane et solide, à une distance minimum de 3,5 mètres de la piscine.
- L'appareil doit être branché sur une prise de courant de 230 V alternatif et de 50 Hz, avec prise de terre, protégé par un interrupteur différentiel (RCD) avec un courant de fonctionnement résiduel assigné qui n'excède pas 30mA
- Il est indispensable d'utiliser un dispositif de sectionnement électrique multiple avec une séparation minimum de 3mm entre les contacts afin de déconnecter le filtre de l'alimentation électrique.

ACHTUNG
- Lesen Sie diese Anleitung genau durch, bevor Sie mit der Installation beginnen und folgen Sie sowohl während der Montage als auch während der Benutzung genau den Anweisungen.
- Der Filter muss auf einer ebenen und stabilen Unterfläche angebracht werden, und zwar in einem Abstand von mindestens 3,5 Meter vom Schwimmbecken.
- Das Gerät muss an einen 230 V 50 Hz Wechselstromanschluß mit Erdung angeschlossen werden. Dieser muss durch ein Differential (RCD) mit höchstens 30 mA gesichert sein.
- Es muss unbedingt ein Allpolschalter mit einem Mindestabstand von 3 mm zwischen den Kontakten verwendet werden, um den Filter von der Stromversorgung trennen zu können.

ATTENZIONE
- Legga attentamente questo manuale prima di installare l'attrezzatura e segua meticolosamente le indicazioni durante l'installazione dello stesso e durante il suo uso.
- Collocare l'attrezzatura su una superficie piana e solida, a una distanza non inferiore di 3,5 metri dalla piscina.
- L'attrezzatura va collegata ad una presa di tensione da 230 V di corrente alterna e 50 Hz, con una connessione a terra, protetta con un interruttore differenziali (RCD) con una corrente di funzionamento residuale assegnata che non ecceda i 30 mA.
- È imprescindibile utilizzare un dispositivo di disconnessione multipla con una separazione minima di 3 mm tra i contatti per sconnettere il filtro della alimentazione elettrica.

WAARSCHUWING
- Lees deze handleiding alvorens de filter te installeren en volg de instructies zorgvuldig op tijdens de installatie en het gebruik.
- Plaats het toestel op een vlakke en solide ondergrond op minimaal 3,5 m van het zwembad
- Het toestel moet worden aangesloten op een geaard netwerk met een wisselstroomspanning van 230 V en 50 Hz, en moet beschermd zijn door een differentieelschakelaar (RCD) met een residule differentieelstroom van niet meer dan 30 mA.
- Het is beslist noodzakelijk om een meerpolige schakelaar te gebruiken met een afstand van minstens 3 mm tussen de contacten om de filter los te koppelen van de elektrische voeding.

ATENÇAO
- Leia com atenção este manual antes de instalar o filtro e siga rigorosamente as indicações durante a instalação e respectivo uso.
- Coloque o aparelho sobre uma superfície plana e sólida, a uma distância não inferior a 3,5 metros da piscina.
- O aparelho deve ser ligado a uma tomada de 230 V de corrente alterna e 50 Hz, com ligação à terra, protegida com um interruptor diferencial (RCD) com uma corrente de funcionamento residual que não exceda os 30 mA.
- É imprescindível utilizar um dispositivo de desconexão múltiplo com uma separação mínima de 3 mm entre contactos para desligar o filtro da alimentação eléctrica.



Manufacturas GRE S.A.
Aritz Bidea n.57, Barrio Trobika, Apartado 69, E-48100 Mungia, Spain

AR-700

TECHNICAL CHARACTERISTICS – CARACTERISTICAS TECNICAS – CARACTERISTIQUES TECHNIQUES

A		600 mm.
B		520 mm.
Filter diameter / Diámetro filtro / Diamètre filtre		300 mm.
Flow / Caudal / Débit		4 m3/h
Filtering speed / Velocidad de filtración / Vitesse de filtrage		50 m^3/ m^2.h
Sand / Arena / Sable		25 Kg.
Granule / Granulometría /Granulométrie		0,4-0,8 mm.
260 W	**230V ˜50Hz**	CE
IP-X4 Ins. Class 155 S1	**T_{media}max 35°C**	

WARNING
- Read this manual thoroughly before installing the filter and carefully follow the instructions during installation and use.
- Place the filter on a flat, solid surface at a minimum distance of 3.5 metres from the pool
- The appliance should be connected to a voltage of 230 V alternating current and 50 Hz power point, with earth connection, protected by a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.
- It is essential that you use a multiple disconnection device with a space of at least 3 mm between surfaces to disconnect the filter from the electrical current.

ATENCIÓN
- Lea atentamente este manual antes de instalar el equipo y siga meticulosamente las indicaciones durante la instalacion del mismo y durante su uso.
- Colocar el equipo sobre una superficie plana y sólida, a una distancia no inferior a 3,5 metros de la piscina
- El equipo se debe conectar a una toma de tensión de 230 V de corriente alterna y 50 Hz, con conexión a tierra, protegida con un interruptor diferencial (RCD) con una corriente de funcionamiento residual asignada que no exceda de 30 mA
- Es imprescindible utilizar un dispositivo de desconexión múltiple con una separación mínima de 3 mm entre contactos para desconectar el filtro de la alimentación eléctrica.

ATTENTION
- Lisez attentivement ce manuel avant d'installer le filtre et suivez méticuleusement les indications pendant son installation et son utilisation.
- Placer le filtre sur une surface plane et solide, à une distance minimum de 3,5 mètres de la piscine.
- L'appareil doit être branché sur une prise de courant de 230 V alternatif et de 50 Hz, avec prise de terre, protégé par un interrupteur différentiel (RCD) avec un courant de fonctionnement résiduel assigné qui n'excède pas 30mA
- Il est indispensable d'utiliser un dispositif de sectionnement électrique multiple avec une séparation minimum de 3mm entre les contacts afin de déconnecter le filtre de l'alimentation électrique.

ACHTUNG
- Lesen Sie diese Anleitung genau durch, bevor Sie mit der Installation beginnen und folgen Sie sowohl während der Montage als auch während der Benutzung genau den Anweisungen.
- Der Filter muss auf einer ebenen und stabilen Unterfläche angebracht werden, und zwar in einem Abstand von mindestens 3,5 Meter vom Schwimmbecken.
- Das Gerät muss an einen 230 V 50 Hz Wechselstromanschluß mit Erdung angeschlossen werden. Dieser muss durch ein Differential (RCD) mit höchstens 30 mA gesichert sein.
- Es muss unbedingt ein Allpolschalter mit einem Mindestabstand von 3 mm zwischen den Kontakten verwendet werden, um den Filter von der Stromversorgung trennen zu können.

ATTENZIONE
- Legga attentamente questo manuale prima di installare l'attrezzatura e segua meticolosamente le indicazioni durante l'installazione dello stesso e durante il suo uso.
- Collocare l'attrezzatura su una superficie piana e solida, a una distanza non inferiore di 3,5 metri dalla piscina.
- L'attrezzatura va collegata ad una presa di tensione da 230 V di corrente alterna e 50 Hz, con una connessione a terra, protetta con un interruttore differenziali (RCD) con una corrente di funzionamento residuale assegnata che non ecceda i 30 mA.
- È imprescindibile utilizzare un dispositivo di disconnessione multipla con una separazione minima di 3 mm tra i contatti per sconnettere il filtro della alimentazione elettrica.

WAARSCHUWING
- Lees deze handleiding alvorens de filter te installeren en volg de instructies zorgvuldig op tijdens de installatie en het gebruik.
- Plaats het toestel op een vlakke en solide ondergrond op minimaal 3,5 m van het zwembad
- Het toestel moet worden aangesloten op een geaard netwerk met een wisselstroomspanning van 230 V en 50 Hz, en moet beschermd zijn door een differentieelschakelaar (RCD) met een residule differentieelstroom van niet meer dan 30 mA.
- Het is beslist noodzakelijk om een meerpolige schakelaar te gebruiken met een afstand van minstens 3 mm tussen de contacten om de filter los te koppelen van de elektrische voeding.

ATENÇAO
- Leia com atenção este manual antes de instalar o filtro e siga rigorosamente as indicações durante a instalação e respectivo uso.
- Coloque o aparelho sobre uma superfície plana e sólida, a uma distância não inferior a 3,5 metros da piscina.
- O aparelho deve ser ligado a uma tomada de 230 V de corrente alterna e 50 Hz, com ligação à terra, protegida com um interruptor diferencial (RCD) com uma corrente de funcionamento residual que não exceda os 30 mA.
- É imprescindível utilizar um dispositivo de desconexão múltiplo com uma separação mínima de 3 mm entre contactos para desligar o filtro da alimentação eléctrica.

AURICPOOL METALAST

Address: Passeig Sanllehy, 25 E-08213 Polinyà (Spain)
Phone. + 34 937 131 855 - **Fax.** + 34 937 134 111

PRODUCT VERIFICATION

CE FILE

ANNEX: CERTIFICATIONS AND TEST PERFORMED

PRODUCT: **Monoblock filters AR700 and variations**

REFERENCE: **Various**

DATE: **September 2009**

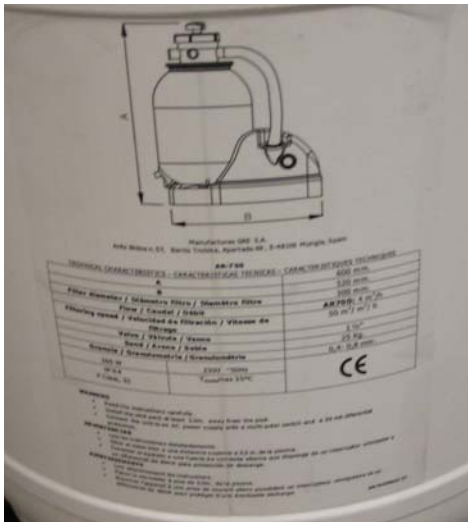
MANUFACTURER: **METALAST S.A.U.**
Passeig Sanllehy 25
08213 POLINYA
BARCELONA
SPAIN

This document contains all the testing reports and certificates used for this product verification. The document contains 181 pages

Deviation report regarding CE Mark evaluation performed by Intertek Italia

Client:	METALAST S.A.U. Passeig Sanllely 25 08213 Polinya Barcellona
Product brand name:	Gre / **AR-700**
Description:	Monoblock filter for swimming-poll
Manufacturer:	METALAST S.A.U. Passeig Sanllely 25 08213 Polinya Barcellona
Original designation:	Gre / **AR-700**
Directives applied for the evaluation:	LVD: 73/23/EC + 93/68/EC+2006/95/EC EMCD: 89/336/EC + 92/31/EC + 93/68/EC+2004/108/EC RoHS: 2002/95/EC

Item Pictures:



Campoformido 08/09/2008	Report issued by Arianna Fogar

Intertek Italia S.r.l.

Via Principe di Udine, 114
33030 Campoformido (UD)
Tel: +39 0432 653411 – Fax: +39 0432 653499

1	***Brand name extension***	Not Necessary, test reports, manual, rating plate and other documents are issued for the item AR700	**N**
2	***Instruction Manual***	Available.	**C**
3	***MD Conformity Test Report***	Not Necessary	**N**
4	***MD Conformity Certificates***	Not Necessary	**N**
5	***LVD Test Report***	Not Available	**N**
6	***LVD Conformity Certificates***	Available TUV certificate no. AN 500047295 0001 referred to TUV report no. 15007758001. The product certified is a motor pump manufactured by Taizhou Xin Hong Ji Pump Co., Ltd. Model TIPO-2. The client declared that the motor pump model TIPO-2 is used in AR-700	**C**
7	***EMCD Test Report***	Available test report issued by Applus – Certification Technological Center no. 07/3201628 issued on October 18 2007. The product certified is a filter manufactured by Gre, Model Filtro monobloc ∅230. The client declares that the motors used in the model AR-700 is similar in ratings and technology to the one certified by Applus.	**C**
8	***EMCD Conformity Certificates***	Not Available	**N**
9	***Electrical Diagram***	Available	**C**
10	***List of the Critical Components***	Available the list of spare parts, not available the list of components.	**C**
11	***Ratig Plate***	Available.	**C**
12	***Packaging description***	Available.	**C**
13	***Declaration about the involved Notified Body (Required for machines in Annex IV - MD)***	No needed	**N**
14	***RoHS & WEEE Conformity Test Report***	No needed	**N**
15	***RoHS & WEEE Conformity Certificates***	Available self-declaration for RoHS and WEEE compliance.	**C**

Legend: C = Complies, F = Failed, N = Not necessary.

Conclusion:
The technical file is suited for CE marking

Campoformido
08/09/2008

Report issued by
Arianna Fogar

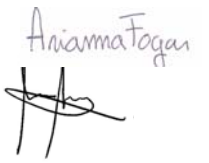
Intertek Italia S.r.l.

Via Principe di Udine, 114
33030 Campoformido (UD)
Tel: +39 0432 653411 – Fax: +39 0432 653499

TEST REPORT

IEC / EN 60335-2-41
Safety of household and similar electrical appliances
Part 2: Particular requirements for pumps

Report Reference No. .....:	E0852108
Tested by (name + signature) .....:	Arianna Fogar
Approved by (name + signature).....:	Marco De Mattia
Date of issue .....:	23 December 2008



CB Testing Laboratory.....:	**Intertek Italia s.r.l.**
Address .....:	Via Principe di Udine, 33030 Campoformido (UD) - Italy
Testing location/ address .....:	same as above
Applicant's name.....:	METALAST S.A.U.
Address .....:	Passeig Sanllely 25, 08213 Polinya, Barcellona - SPAIN
Test specification:	
Standard.....:	EN 60335-2-41:2003 + A1:2004 used in conjunction with EN 60335-1:2002 + A1:2004 + A11:2004 and EN 50366:2003
Test procedure .....:	CB / CCA
Non-standard test method……..:	N/A
Test Report Form No.....:	IECEN60335_2_41B
Test Report Form(s) Originator.....:	VDE
Master TRF .....:	Dated 2005-09

Copyright © 2005 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

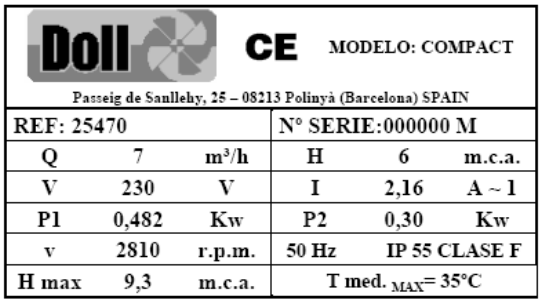
This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program

Test item description .....:	Monoblock filter for swimming-poll
Trade Mark .....:	GRE
Manufacturer .....:	METALAST S.A.U
Model/Type reference .....:	See page 3
Ratings .....:	230V, 50Hz, for details see page 3

Copy of marking plate

AR135



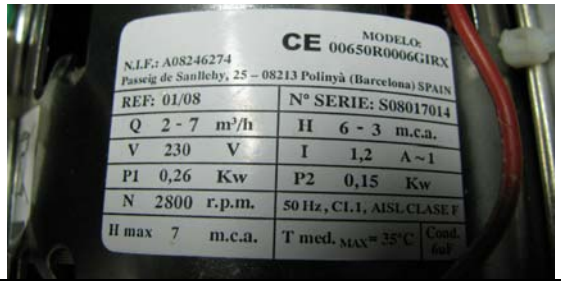
Doll CE MODELO: COMPACT

Passeig de Sanllehy, 25 – 08213 Polinyà (Barcelona) SPAIN

REF: 25470			N° SERIE:000000 M		
Q	7	m^3/h	H	6	m.c.a.
V	230	V	I	2,16	A ~ 1
P1	0,482	Kw	P2	0,30	Kw
v	2810	r.p.m.	50 Hz	IP 55 CLASE F	
H max	9,3	m.c.a.	T med. $_{MAX}$= 35°C		

H	760 mm.
M	700 mm.
Filter diameter / Diámetro filtro / Diamètre filtre	380 mm.
Flow / Caudal / Débit	5.5 m3/h
Filtering speed / Velocidad de filtración / Vitesse de filtrage	48.5 $m^3/m^2/h$
Valve / Válvula / Vanne	1 1/2"
Sand / Arena / Sable	40 Kg.
Granule / Granulometria /Granulométrie	0,4- 0,8 mm.
482 W / 230V ~50Hz	CE
IP-X4 F Class, S1 / T_{media}max 35ºC	

AR700



A	600 mm.
B	520 mm.
Filter diameter / Diámetro filtro / Diamètre filtre	300 mm.
Flow / Caudal / Débit	**AR700:** 4 m^3/h
Filtering speed / Velocidad de filtración / Vitesse de filtrage	50 $m^3/m^2/h$
Valve / Válvula / Vanne	1 ¼"
Sand / Arena / Sable	25 Kg.
Granule / Granulometria /Granulométrie	0,4- 0,8 mm.
260 W / 230V ~50Hz	CE
IP-X4 F Class, S1 / T_{media}max 35ºC	

Ratings:

Electric pump models	Hz/ ph	Voltage	Power (KW)	Flow rate (m^3/h)	Depth (m)	Maximum head (m)	Minimum head (m)
AR135 *	50/1	230V	482W	5.5m^3/h	9.3/6	9.3	6
AR700 **	50/1	230V	260W	3.5m^3/h	6/3	6	3

*The models AR135 + (-L) or + (-E) are identical to AR135, except for the skimmer. The models AR135 and AR1350 are identical but have different flow rate and filtration speed due to hydraulic losses by the accessories used in the two filters.

** The models AR700 and AR700C are identical but have different flow rate and filtration speed due to hydraulic losses by the accessories used in the two filters.

Test item particulars ..... :	
Classification of installation and use ..... :	Class I
Supply Connection ..... :	Supply cord + plug
..... :	
..... :	
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P(Pass)
- test object does not meet the requirement ..... :	F(Fail)
Testing ..... :	
Date of receipt of test item ..... :	30 July 2008
Date (s) of performance of tests ..... :	18-22 December 2008

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

General product information / Additional remarks :

IEC / EN 60335-2-41

Clause	Requirement - Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		—
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.		P
5.2	If the test of Annex D has to be carried out, an additional appliance may be used. (IEC 60335-1/A1)		N/A
5.3	The tests of Clause 14 and 21.2 and 22.24 are carried out after the tests of Clause 29. (IEC 60335-1/A1)		P

5.7	Temperature of liquid is maintained within +0, -5K of the temperaturemarked on the pumb. (IEC 60 335-2-41)		P
5.14	NOTE: Guidance is given in Annex P for enhanced requirements that may be used to ensure an acceptable level of protection against electrical and thermal hazards for particular types of appliances used in an installation without a protective earthing conductor in countries that have warm damp equable climates. (IEC 60335-1/A1)		N/A
5.101	Pumps are tested as portable appliances, unless they are intended to be fixed (IEC 60 335-2-41)		N/A
5.102	Stationary pumps having a three-phase motor which does not incorporate a protective device are installed with an appropiate device, in accordance with the instructions (IEC 60 335-2-41)		N/A

6	CLASSIFICATION		—
6.1	Protection against electric shock: Class 0, 0I, I, II, III	Class I	P
	Submersible pumps for use in swimming pools when persons are in the pool shall be of class III with a rated voltage < 12V (IEC 60 335-2-41)		N/A
	Other submersible pumps for use in water and other conducting liquids shall be of class I or class III. However, aquarium pumps may be of class II (IEC 60 335-2-41)		N/A
	Portable pumps for cleaning and other maintenance of swimming pools shall be of class I or class III (IEC 60 335-2-41)		N/A
	Other pumps shall be class I, class II or class III (IEC 60 335-2-41)	Class I	P
	Table fountain pumps for indoor use may also be class II as long as their rated power input does not exceed 25 W. (IEC 60 335-2-41/A1)		N/A
6.2	Submersible pumps shall be at least IP X8 (IEC 60 335-2-41)		N/A
	Portable pumps for cleaning and other maintenance of swimming pools shall be at least IP X7 (IEC 60 335-2-41)		N/A

	Other pumps shall be at least IP X4 (IEC 60 335-2-41)	IPX4	P
	Shower-boost pumps intended for installation outside of zones 1 and 2, as specified in IEC 60364-7-701, shall be at least IPX2. (IEC 60 335-2-41/A1)		N/A

7	MARKING AND INSTRUCTIONS		—
7.1	Rated voltage or voltage range (V).....	230V	P
	Nature of supply		N/A
	Rated frequency (Hz).....	50Hz	P
	Rated power input (W):	See page 3	P
	Rated current (A)		N/A
	Manufacturer's or responsible vendor's name, trademark or identification mark	Trademark GRE	P
	Model or type reference	See page 3	P
	Symbol 5172 of IEC 60417, for Class II appliances		N/A
	IP number, other than IPX0	IPX4	P
	The enclosure of electrically-operated water valves incorporated in external hose-sets for connection of an appliance to the water mains shall be marked with symbol IEC 60417-5036 (DB:2002-10) if their working voltage exceeds extra-low voltage. (IEC 60335-1/A1)		N/A
	Pumps having a rated power input exceeding 50 W shall be marked with: (IEC 60 335-2-41)		—
	-the minimum total head in metres, if > 0 metres) (IEC 60 335-2-41)		P
	-the maximum operating depth in metres, if > 1 metres (for submersible pumps) (IEC 60 335-2-41)		P
	-the direction of rotation (three phase motor only) (IEC 60 335-2-41)		N/A
	Pumps shall be marked with the maximum liquid temperature which shall not be less than 35°C. (IEC 60 335-2-41)		P
	If the temperature exceeds 35 °C, they shall be marked with the maximum period of operation, unless they are intended for continuous operation. (IEC 60 335-2-41)		N/A

7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		P
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N/A
	the power input is related to the mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used		P
	[symbol IEC 60417-5021 (DB:2002-10)] equipotentiality (IEC 60335-1/A1)		N/A
	symbol IEC 60417-5036 (DB:2002-10)] dangerous voltage (IEC 60335-1/A1)		N/A
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		—
	- marking of terminals exclusively for the neutral conductor (N)		N/A
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)		P
	- marking not placed on removable parts		P
7.9	Marking or placing of switches which may cause a hazard		N/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means.....		N/A

	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A
7.12	Instructions for safe use provided		P
	The instruction for use of class I portable pumps for cleaning and other maintenance of swimming pools shall include the substance of the following: (IEC 60 335-2-41)		—
	-the pump must not be used when people are staying in the water (IEC 60 335-2-41)		P
	-the pump must supplied through a residual current device (RCD) with a rated residual operating current < 30 mA (IEC 60 335-2-41)		P
	The instructions for use for pumps marked with a temperature exceeding 35 °C shall state the maximum period of operation and the minimum rest period, unless the pump is intended for continuous operation at this temperature. (IEC 60 335-2-41)		N/A
7.12.1	Sufficient details for installation supplied		P
	The installation instruction shall provide information on requirements specified for the electrical installation and shall include reference to national wiring rules		P
	If reference is made to zones, the corresponding shall be included		N/A
	The installation instruction shall state the substance of the following: (IEC 60 335-2-41)		—
	- the maximum total head, in meters (for pumps having a rated power input >50W) (IEC 60 335-2-41)		P
	- pollution of the liquid could occur due to leakage of lubricants (for submersible pumps and vertical wet pit pumps containing lubricants) (IEC 60 335-2-41)		N/A
	- Additional information for installation of stationary pumps having a three-phase motor not incorporating a protective device as specified (IEC 60 335-2-41)		N/A
	The instructions for installation shall state that pumps for outdoor fountains, garden ponds and similar places have to be supplied through a RCD (operating current < 30 mA) (IEC 60 335-2-41)		P

	The instructions for installation shall give full informations for installation of class I pumps for operating in swimming pools as specified (IEC 60 335-2-41)		P
	The installation instructions for class III pumps intended to be installed in zone 0 of a swimming pool shall state that the transformer is located outside zone1 (IEC 60 335-2-41)		N/A
	The installation instructions for class II pumps intended to be fixed in zone 1 of a swimming pool, or fixed close to a garden pond or similar place, shall state that the pump is to be located where flooding cannot occur (IEC 60 335-2-41)		N/A
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules		N/A
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions stating that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		—
	- dimensions of space		N/A
	- dimensions and position of supporting means		N/A
	- distances between parts and surrounding structure		N/A
	- dimensions of ventilation openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- necessity to allow disconnection of the appliance from the supply after installation, unless the appliance incorporates a switch complying with 24.3. (IEC 60335-1/A1)		N/A
	The disconnection may be achieved by having the plug accessible or by incorporating a switch in the fixed wiring in accordance with the wiring rules. (IEC 60335-1/A1)		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A

	Replacement cord instructions, type Y attachment		P
	Replacement cord instructions, type Z attachment		N/A
7.12.6	The instructions for heating appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains shall contain the substance of the following: (IEC 60335-1/A1)		—
	CAUTION: In order to avoid a hazard due to inadvertent resetting of the thermal cut-out, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility. (IEC 60335-1/A1)		N/A
7.12.7	The instructions for fixed appliances shall state how the appliance is to be fixed to its support. (IEC 60335-1/A1)		P
7.12.8	The instructions for appliances connected to the water mains shall state (IEC 60335-1/A1)		—
	- the maximum inlet water pressure, in pascals; (IEC 60335-1/A1)		N/A
	- the minimum inlet water pressure, in pascals, if this is necessary for the correct operation of the appliance. (IEC 60335-1/A1)		N/A
	The instructions for appliances connected to the water mains by detachable hose-sets shall state that the new hose-sets supplied with the appliance are to be used and that old hose-sets should not be reused. (IEC 60335-1/A1)		N/A
7.13	Instructions and other texts in an official language		P
7.14	Marking clearly legible and durable		P
7.15	Marking on a main part		P
	Marking clearly discernible from the outside, if necessary after removal of a cover		P
	For portable appliances, cover can be removed or opened without a tool		N/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		P

	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N/A
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		N/A
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A

8	PROTECTION AGAINST ACCESS TO LIVE PARTS		—
8.1	Adequate protection against accidental contact with live parts		P
8.1.1	Requirement applies for all positions, detachable parts removed		P
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
	Use of test probe B of IEC 61032: no contact with live parts		P
8.1.2	Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts		N/A
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements		N/A
8.1.4	Accessible part not considered live if:		—
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0.7 mA		N/A

	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC		N/A
	The quantity of electricity in the discharge is measured using a resistor having a nominal non-inductive resistance of 2 000 Ω (IEC 60335-1/A1)		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		—
	- built-in appliances		N/A
	- fixed appliances		N/A
	- appliances delivered in separate units		N/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		N/A
	Only possible to touch parts separated from live parts by double or reinforced insulation		N/A

9	STARTING OF MOTOR-OPERATED APPLIANCES		—
	Requirements and tests are specified in part 2 when necessary		N/A

10	POWER INPUT AND CURRENT		—
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1	(see appended table)	P
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2	(see appended table)	N/A

11	HEATING		—
11.1	No excessive temperatures in normal use		P

11.2	Placing and mounting of appliance as described		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P
	the windings makes it difficult to make the necessary connections		N/A
11.4	Heating appliances operated under normal operation at 1.15 times rated power input		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage	244 V	P
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage		N/A
11.7	Pumps are operated with the liquid maintained at the temperature marked on the pump. (IEC 60 335-2-41/A1)		P
	They are operated until steady conditions are established unless they are marked with a maximum period of operation. In this case, they are operated for the marked period followed by the rest period specified in the instructions, the test being carried out for three cycles of operation. (IEC 60 335-2-41/A1)		P
	Shower-boost pumps that are also supplied with cold water are operated with the cold water at 15 ºC ± 2 ºC. (IEC 60 335-2-41/A1)		N/A
	Pumps, other than shower-boost pumps, marked with a maximum period of operation are also operated with the liquid maintained at 35 ºC until steady conditions are established. (IEC 60 335-2-41/A1)		N/A
	If the pumb is marked with a maximum period of operation- - the liquid temperature is 35°C instead of the marked temperature; it is also operated for this period followed by the rest period specified in the instructions for use, the liquid being maintained at the marked temperature. This test is carried out for three cycles of operation. (IEC 60335-2-41)		N/A

11.8	Temperature rises not exceeding values in table 3	(see appended tables)	P
	Protective devices do not operate		P
	However, components in protective electronic circuits are allowed to operate provided they are tested for the number of cycles of operation specified in 24.1.4 (IEC 60335-1/A1)		N/A
	The temperature rise limit does not apply to switches or controls tested in accordance with the conditions occurring in the appliance. (IEC 60335-1/A1)		N/A
	Sealing compound does not flow out		N/A
	For pumps marked with a temperature exceeding 35 °C, the temperature rise of the external enclosure is not measured. (IEC 60 335-2-41)		N/A

13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		—
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1.15 times rated power input.....		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage ..		P
	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	Leakage current measurements	(see appended table)	P
13.3	The appliance is disconnected from the supply and the insulation is immediately subjected to a voltage having a frequency of 50 Hz or 60 Hz for 1 min, in accordance with IEC 61180-1. (IEC 60335-1/A1)		P
	The high-voltage source used for the test is to be capable of supplying a short circuit current Is between the output terminals after the output voltage has been adjusted to the appropriate test voltage. (IEC 60335-1/A1)		P

	The overload release of the circuit is not to be operated by any current below the tripping current Ir. The values of Is and Ir are given in Table 5 for various high-voltage sources. (IEC 60335-1/A1)		P

14	TRANSIENT OVERVOLTAGES		—
	Appliances withstand the transient overvoltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	(see appended table)	N/A
	No flashover during the test, unless of functional insulation		N/A
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N/A

15	MOISTURE RESISTANCE		—
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	IPX4	P
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		P
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		P
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529		P
	Water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains are subjected to the test specified for IPX7 appliances. (IEC 60335-1/A1)		N/A
	Shower-boost pumps are subjected to the appropriate test of IEC 60529 both at rest and in operation while supplied at rated voltage. (IEC 60335-2-41/A1)		N/A
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A

	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		P
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		P
	However, for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		P
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support that is constructed to prevent water spraying onto its top surface. The pivot axis of the oscillating tube is located at the same level as the underside of the support and aligned centrally with the appliance. The spray is directed upwards. (IEC 60335-1/A1)		N/A
	For IPX4 appliances, the movement of the tube is limited to two times 90º from the vertical for a period of 5 min. (IEC 60335-1/A1)		P
	Appliances with type X attachment fitted with a flexible cord as described		P
	Detachable parts tested as specified		P
	IP X4 pumps are tested as specified (IEC 60 335-2-41)		P
	IP X7-pumps (submersible pumps) are immersed for 24 h in water as specified (IEC 60 335-2-41)		N/A
	– 1,5 times the pressure occurring at the maximum operation depth, when this depth does not exceed 10m (IEC 60 335-2-41)		N/A

	– 1,3 times the pressure occurring at • the maximum operating depth, or • 15 m, if this is higher. (IEC 60 335-2-41/A1)		N/A
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts removed		N/A
	Overfilling test with additional amount of water, over a period of 1 min (l)		N/A
	The appliance withstands the electric strength test of 16.3		N/A
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		N/A
15.3	Appliances proof against humid conditions		P
	Humidity test for 48 h in a humidity cabinet (not for submersible pumps) (IEC 60335-2-41)		P
	The appliance withstands the tests of clause 16		P

16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		—
16.1	Leakage current not excessive and electric strength adequate		P
	Protective impedance disconnected from live parts before carrying out the tests		N/A
16.2	Single-phase appliances: test voltage 1.06 times rated voltage		P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3		N/A
	Leakage current measurements	(see appended table)	P
16.3	Electric strength tests according to table 7	(see appended table)	P
	No breakdown during the tests		P

17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		—
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use	(see appended table)	N/A
	Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied		N/A
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N/A
	Temperature of the winding not exceeding the value specified in table 8,		N/A
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A

18	ENDURANCE		—
	Requirements and tests are specified in part 2 when necessary		

19	ABNORMAL OPERATION		—
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		N/A
	Pumps are also subjected to the tests of 19.101 and 19.102 (IEC 60335-2-41)		P
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 times rated power input		N/A
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input		N/A
19.4	Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited		N/A

19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		P
	Locked rotor, motor capacitors open-circuited or short-circuited, if required		P
	Locked rotor, capacitors open-circuited one at a time		P
	Test repeated with capacitors short-circuited one at a time, if required		P
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N/A
	Other appliances supplied with rated voltage for a period as specified		P
	Winding temperatures not exceeding values specified in table 8	(see appended table)	P
19.8	Three-phase motors operated at rated voltage with one phase disconnected		N/A
19.10	Series motor operated at 1.3 times rated voltage for 1 min.....		N/A
	During the test, parts not being ejected from the appliance		N/A

19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		N/A
	Appliances incorporating a protective electronic circuit are subjected to the tests of 19.11.3 and 19.11.4. (IEC 60335-1/A1)		N/A
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch that can place the appliance in a stand-by mode, are subjected to the tests of 19.11.4. (IEC 60335-1/A1)		N/A
	During and after each test the following is checked:		—
	- the temperature rise of the windings do not exceed the values specified in table 8		N/A
	- the appliance complies with the conditions specified in 19.13		N/A
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		—
	- the material of the printed circuit board withstands the burning test of annex E		N/A
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		N/A
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N/A
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		—
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A

19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		—
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N/A
	b) open circuit at the terminals of any component		N/A
	c) short circuit of capacitors, unless they comply with IEC 60384-14		N/A
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler		N/A
	e) failure of triacs in the diode mode		N/A
	f) failure of an integrated circuit.		N/A
	In each case, the test is ended if a non-self-resetting interruption of the supply occurs within the appliance. (IEC 60335-1/A1)		N/A
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2		N/A
19.11.4	Appliances having a switch with an off position obtained by electronic disconnection, or a switch that can be placed in the stand-by mode, are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out with the appliance supplied at rated voltage, the switch being set in the off position or in the stand-by mode. (IEC 60335-1/A1)		N/A
	Appliances incorporating a protective electronic circuit are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out after the protective electronic circuit has operated during the relevant tests of Clause 19 except 19.2, 19.6 and 19.11.3. However, appliances that are operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena. (IEC 60335-1/A1)		N/A
	The tests are carried out with surge arresters disconnected, unless they incorporate spark gaps (IEC 60335-1/A1)		N/A

19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4 being applicable. Ten discharges having a positive polarity and ten discharges having a negative polarity are applied at each preselected point (IEC 60335-1/A1)		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3 being applicable. (IEC 60335-1/A1)		N/A
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4. Test level 3 s applicable for signal and control lines. Test level 4 is applicable for the power supply lines. The bursts are applied for 2 min with a positive polarity and for 2 min with a negative polarity (IEC 60335-1/A1)		N/A
19.11.4.4	The power supply terminals of the appliance are subjected to voltage surges in accordance with IEC 61000-4-5, five positive impulses and five negative impulses being applied at the selected points. Test level 3 is applicable for the line-to-line coupling mode, a generator having a source impedance of 2 Ω being used. Test level 4 is applicable for the line-to-earth coupling mode, a generator having a source impedance of 12 Ω being used. (IEC 60335-1/A1)		N/A
	Earthed heating elements in class I appliances are disconnected during this test (IEC 60335-1/A1)		N/A
	For appliances having surge arresters incorporating spark gaps, the test is repeated at a level that is 95 % of the flashover voltage (IEC 60335-1/A1)		N/A
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3 being applicable. During the test, all frequencies between 0,15 MHz to 80 MHz are covered. (IEC 60335-1/A1)		N/A
19.11.4.6	The appliance is subjected to voltage dips and interruptions in accordance with IEC 61000-4-11. The durations specified in Table 1 of IEC 61000-4-11 are applied to each test level, the dips and interruptions being applied at zero crossing of the supply voltage (IEC 60335-1/A1)		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2 being applicable (IEC 60335-1/A1)		N/A

19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A).....		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		P
	Temperature rises not exceeding the values shown in table 9	(see appended table)	P
	Enclosures not deformed to such an extent that compliance with cl. 8 is impaired		P
	If the appliance can still be operated it complies with 20.2		P
	The appliance shall not undergo a dangerous malfunction, and there shall be no failure of protective electronic circuits if the appliance is still operable. (IEC 60335-1/A1)		P
	Appliances tested with an electronic switch in the off position, or in the stand-by mode, shall not become operational (IEC 60335-1/A1)		N/A
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		—
	- basic insulation.....		P
	- supplementary insulation.....		N/A
	- reinforced insulation.....		N/A
19.101	The pump is supplied at rated voltage and operated at approximately half at the maximum total head for 5 min, (IEC 60335-2-41)		P
	After which the inlet is removed from the liquid and the operation continued for 7h (IEC 60335-2-41)		P
	Pumps are operated again for 5 min at approximately half the maximum total head (IEC 60335-2-41)		P
	If the pump becomes inoperable during the test., it is disconnected from the supply and filled with water (IEC 60335-2-41)		P
19.102	Pumps marked with a maximum period of operation are supplied at rated voltage and operated under normal operation until steady conditions are established. (IEC 60335-2-41)		N/A

20	STABILITY AND MECHANICAL HAZARDS		—
20.1	Adequate stability		P
	Submersible pumps are not subjected to the test (IEC 60335-2-41)		N/A
	Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		P
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		N/A
	Protective enclosures, guards and similar parts are non-detachable		N/A
	Adequate mechanical strength and fixing of protective enclosures		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N/A
	Not possible to touch dangerous moving parts with test probe		N/A

21	MECHANICAL STRENGTH		—
	Appliance has adequate mechanical strength and is constructed as to withstand rough handling		P
	Compliance is checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, the spring hammer test. (IEC 60335-1/A1)		P
	The appliance is rigidly supported and three blows, having an impact energy of 0,5 J, are applied to every point of the enclosure that is likely to be weak. (IEC 60335-1/A1)		P
	For pumps, other than shower-boost pumps, the impact energy is increased to 1,0 J. No damage after three blows applied to various parts of the enclosure (IEC 60335-2-41)		P

	If necessary, repetition of groups of three blows on a new sample		P
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N/A
21.2	Accessible parts of solid insulation shall have sufficient strength to prevent penetration by sharp implements. (IEC 60335-1/A1)		N/A
	Compliance is checked by subjecting the insulation to the following test, unless the thickness of supplementary insulation is at least 1 mm and that of reinforced insulation is at least 2 mm. (IEC 60335-1/A1)		N/A
	The insulation is raised to the temperature measured during the test of Clause 11. (IEC 60335-1/A1)		N/A
	The surface of the insulation is then scratched by means of a hardened steel pin, the end of which has the form of a cone with an angle of 40°. Its tip is rounded with a radius of 0,25 mm ± 0,02 mm. (IEC 60335-1/A1)		N/A
	The pin is held at an angle of 80° - 85° to the horizontal and loaded so that the force exerted along its axis is 10 N ± 0,5 N. (IEC 60335-1/A1)		N/A
	The scratches are made by drawing the pin along the surface of the insulation at a speed of approximately 20 mm/s. Two parallel scratches are made. (IEC 60335-1/A1)		N/A
	They are spaced sufficiently apart so that they are not affected by each other, their length covering approximately 25 % of the length of the insulation. (IEC 60335-1/A1)		N/A
	Two similar scratches are made at 90o to the first pair without crossing them. (IEC 60335-1/A1)		N/A
	The test fingernail of Figure 7 is then applied to the scratched surface with a force of approximately 10 N. No further damage, such as separation of the material, shall occur. The insulation shall then withstand the electric strength test of 16.3. (IEC 60335-1/A1)		N/A

	The hardened steel pin is then applied perpendicularly with a force of 30 N 0,5 N to an unscratched part of the surface. The insulation shall then withstand the electric strength test of 16.3 with the pin still applied and used as one of the electrodes. (IEC 60335-1/A1)		N/A

22	CONSTRUCTION		—
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled		P
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		—
	- a supply cord fitted with a plug		P
	- a switch complying with 24.3		N/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N/A
	- an appliance inlet		N/A
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N/A
	Each pin subjected to a tork of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N/A
22.5	No risk of electric shock when touching the pins of the plug		P

	The appliance is supplied at rated voltage. Any switch is then placed in the off position and the appliance is disconnected from the supply mains at the instant of voltage peak. One second after disconnection, the voltage between the pins of the plug is measured with an instrument that does not appreciably affect the value to be measured. (IEC 60335-1/A1)		P
	The voltage shall not exceed 34 V		P
22.6	Electrical insulation not affected by condensing water or leaking liquid		P
	Compliance is checked by inspection and for pumps of class II by the test with removal seal of the pump shaft as specified (IEC 60 335-2-41)		P
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N/A
	Shower-boost pumps having a separate enclosure shall have a drain hole in the enclosure positioned so that the water can drain out without impairing electrical insulation, unless water cannot accumulate within the enclosure in normal use. (IEC 60 335-2-41)		N/A
	The hole shall be at least 5 mm in diameter or 20 mm2 in area with a width of least 3 mm. (IEC 60 335-2-41)		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices		P
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N/A
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		P
	Adequate insulating properties of oil or grease to which insulation is exposed		P
22.10	It shall not be possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance. (IEC 60335-1/A1)		N/A

	NOTE 1 : Voltage-maintained controls will automatically reset if they become deenergized (IEC 60335-1/A1)		N/A
	Non-self-resetting thermal motor protectors shall have a trip-free action unless they are voltage maintained. (IEC 60335-1/A1)		N/A
	NOTE 2: Trip-free is an automatic action that is independent of manipulation or position of the actuating member. (IEC 60335-1/A1)		N/A
	Reset buttons of non-self-resetting controls shall be located or protected so that their accidental resetting is unlikely to occur if this could result in a hazard. (IEC 60335-1/A1)		N/A
	NOTE 3: For example, this requirement precludes the location of reset buttons on the back of an appliance, which could result in them being reset by pushing the appliance against a wall. (IEC 60335-1/A1)		N/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts	Screws used	P
	Obvious locked position of snap-in devices used for fixing such parts		P
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		P
	Tests as described		P
22.12	Handles, knobs etc. fixed in a reliable manner		P
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		P
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		P
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		P
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N/A
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		P

	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		P
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts		N/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P
	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use. Direct contact between opper and aluminium or their alloys is to be avoided (IEC 60 335-2-41)		P
22.19	Driving belts not used as electrical insulation		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		N/A
	Compliance is checked by inspection and, if necessary, by appropriate test		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		P
22.22	Appliances not containing asbestos		P
22.23	Oils containing polychlorinated biphenyl (PCB) not used		P
22.24	Bare heating elements adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N/A

22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		P
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		P
22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified for supplementary insulation		N/A
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29 if wires, screws etc. becomes loose		N/A
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		N/A
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/A
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts		P
	Electrodes not used for heating liquids		P

	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		P
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault		P
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N/A
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		P
22.39	Lamp holders used only for the connection of lamps		N/A
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible		N/A

	The requirement is not applicable to submersible pumps and vertical wet pit pumps (IEC 60 335-2-41)		N/A
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children		P
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		P
22.46	Software used in protective electronic circuits shall be software class B or software class C (IEC 60335-1/A1)		N/A
	NOTE 1: Failure of software class B in the presence of another fault in the appliance, or failure of software class C alone, could result in dangerous malfunction, electric shock, fire, mechanical or other hazards. Software class A denotes software used for functional purposes. (IEC 60335-1/A1)		N/A
	Compliance is checked by evaluating the software in accordance with Annex R. (IEC 60335-1/A1)		N/A
	NOTE 2: If the software program is modified, the evaluation and relevant tests are repeated if the modification can influence the results of the test involving protective electronic circuits. (IEC 60335-1/A1)		N/A
22.47	Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use. (IEC 60335-1/A1)		N/A

	Compliance is checked by connecting the appliance to a water supply having a static pressure equal to twice the maximum inlet water pressure or 1,2 MPa, whichever is higher, for a period of 5 min (IEC 60335-1/A1)		N/A
	There shall be no leakage from any part, including any inlet water hose (IEC 60335-1/A1)		N/A
22.48	Appliances intended to be connected to the water mains shall be constructed to prevent backsiphonage of non-potable water into the water mains. (IEC 60335-1/A1)		N/A
	Compliance is checked by the relevant tests of IEC 61770 (IEC 60335-1/A1)		N/A
22.101	Pumps shall withstand the static liquid pressure occuring in normal use as specified: (Submersible pumps and vertical wet pit pumps are not subjected to this test) (IEC 60 335-2-41)		P
	The pressure test is carried out for 1 min at a pressure of 1,2 times the pressure occuring at maximum pump total head: ..... m (IEC 60 335-2-41)		P
22.102	The material of the pump shall not be affected by the liquid for which the pump is intended if a hazard could result (IEC 60 335-2-41)		P
22.103	Submersible pumps and vertical wet pit pumps shall be constructed so that pollution of liquid by lubricants is prevented as far as possible (IEC 60335-2-41)		N/A
22.104	Submersible pumps and vertical wet pit pumps having a mass > 3 Kg shall be constructed so that means for hoisting can be attached (IEC 60 335-2-41)		N/A
22.105	Class I submersible pumps having a plastic enclosure shall be so constructed so that leakage of liquid into the motor does not result in a hazard (IEC 60 335-2-41)		N/A
	After the specified test the accumulating water shall come in contact with earthed metal before it reaches live parts (IEC 60 335-2-41)		N/A
22.106	Shower-boost pumps shall be constructed so that they can be permanently connected to the water supply. (IEC 60 335-2-41/A1)		N/A

	Shower-boost pumps for wall mounting shall be constructed so that they can be securely fixed independently of the connection to the water supply. (IEC 60 335-2-41/A1)		N/A

23	INTERNAL WIRING		—
23.1	Wireways smooth and free from sharp edges		P
	Wires protected against contact with burrs, cooling fins etc.		P
	Wire holes in metal well rounded or provided with bushings		N/A
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test, 1000 V between live parts and accessible metal parts		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		P
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		N/A

23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		N/A
23.7	The colour combination green/yellow used only for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		P
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, shall be at least equivalent to that of light polyvinyl chloride sheathed flexible cord (code designation 60227 IEC 52). (IEC 60335-1/A1)		N/A
	NOTE The mechanical characteristics specified in IEC 60227 are not evaluated (IEC 60335-1/A1)		N/A

24	COMPONENTS		—
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components	(see appended table)	P
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		N/A
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		N/A
	Motors are not required to comply with IEC 60034-1. (IEC 60335-1/A1)		P
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or		N/A
	tested according to annex F		N/A

24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N/A
	tested according to annex G		N/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or		N/A
	tested according to annex H		N/A
	Level switches are tested for 50 000 cycles of operation (IEC 60 335-2-41)		N/A
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		——
	- thermostats: 10 000		N/A
	- temperature limiters: 1 000		N/A
	- self-resetting thermal cut-outs: 300		N/A
	- voltage-maintained non-self-resetting thermal cut-outs: 1 000		N/A
	- other non-self-resetting thermal cut-outs: 30		N/A
	- timers: 3 000		N/A
	- energy regulators: 10 000		N/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D . (IEC 60335-1/A1)		P
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection provided by enclosures against harmful ingress of water declared for subclause 6.5.2 of IEC 60730-2-8 shall be IPX7 (IEC 60335-1/A1)		N/A
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
	The relevant standard for interconnection couplers is IEC 60320-2-2. (IEC 60335-1/A1)		N/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.2	No switches or automatic controls in flexible cords		P

	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs that can be reset by soldering		P
	Level switches may be incorporated in interconnection cords (IEC 60335-2-41)		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		P
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		P
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V.		N/A
	In addition, the motors are complying with the requirements of Annex I		N/A
24.7	Hose-sets for the connection of appliances to the water mains shall comply with IEC 61770. They shall be supplied with the appliance. (IEC 60335-1/A1)		N/A

25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		—
25.1	Submersible pumps, other than class III, shall be provided with a supply cord fitted with a plug (IEC 60335-2-41)		P
25.2	Appliance not provided with more than one means of connection to the supply mains		N/A

	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A
25.3	Submersible pumps, other than class III, shall be provided with a flexible cord (IEC 60335-2-41)		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		N/A
25.5	Method for assemble supply cord with the appliance:		—
	- type X attachment is not allowed for submersible pumps (IEC 60335-2-41)		P
	- type Y attachment		P
	- type Z attachment, allowed for pumps having a rated power input not exceeding 100W and for pumps for garden ponds (IEC 60335-2-41)		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
25.6	Plugs fitted with only one flexible cord		P
25.7	Supply cord not lighter than:		—
	- 60245 IEC 66 (for pumps intended for outdoor use having a rated input > 1000 W and portable pumps having a mass > 5 Kg) (IEC 60 335-2-41)		N/A
	- 60245 IEC 66 (for pumps intended for use in swimming pools other than class III pumps) (IEC 60 335-2-41)		N/A
	- 60227 IEC 57 (for fixed pumps having a rated input < 1000 W and portable pumps for outdoor use having a mass < 5 Kg) (IEC 60 335-2-41)		N/A
	- 60245 IEC 57 (for pumps for indoor use, except table fountain pumps and aquarium pumps , shower-boost pumps and class III pumps (IEC 60 335-2-41/A1)		N/A
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used, unless		N/A

	appliance so constructed that the supply cord is not likely to touch external metal parts in normal use, or		N/A
	the supply cord is appropriate for higher temperatures, type Y or type Z attachment used		N/A
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm^2)		P
	The supply cord of submersible pumps other than class III pumps intended for outdoor use shall have a length of at least 10 m (IEC 60 335-2-41)		N/A
25.9	Supply cord not in contact with sharp points or edges		P
25.10	Green/yellow core for earthing purposes in Class I appliance		P
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		P
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		P
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N/A
25.13	Inlet opening so shaped as to prevent damage to the supply cord		P
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		P
	the appliance is class 0		N/A
25.14	Supply cords adequately protected against excessive flexing		N/A
	Portable pumps, except table fountain pumps and aquarium pumps, are subjected to the test (EN 60335-2-41/A1)		N/A
	Flexing test:		—
	- applied force (N).....		N/A
	- number of flexings.....		N/A

	The test does not result in:		—
	- short circuit between the conductors		N/A
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage, within the meaning of the standard, to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		P
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		P
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm)		P
	Max. 2 mm displacement of the cord, and conductors not moved more than 1 mm in the terminals		P
	Creepage distances and clearances not reduced below values specified in 29.1		P
25.16	Cord anchorages for type X attachments constructed and located so that:		—
	- replacement of the cord is easily possible		P
	- it is clear how the relief from strain and the prevention of twisting are obtained		P
	- they are suitable for different types of cord		P
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		P
	- the cord is not clamped by a metal screw which bears directly on the cord		P
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		P
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		P

	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		P
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
25.17	Adequate cord anchorages for type Y and Z attachment		P
25.18	Cord anchorages only accessible with the aid of a tool, or		P
	so constructed that the cord can only be fitted with the aid of a tool		P
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		P
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		P
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.		P
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N/A
25.22	Appliance inlet:		—
	- live parts not accessible during insertion or removal		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A

	- is not for cold conditions if temp. Rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		N/A
25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083		N/A

26	TERMINALS FOR EXTERNAL CONDUCTORS		—
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors		P
	However, earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection. (IEC 60335-1/A1)		N/A
	Terminals only accessible after removal of a non-detachable cover		P
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered		N/A
	Screws and nuts serve only to clamp supply conductors, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N/A
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N/A

26.3	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		N/A
	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		—
	- the terminal does not loosen		N/A
	- internal wiring is not subjected to stress		N/A
	- clearances and creepage distances are not reduced below the values in 29		N/A
	Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm).....		N/A
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		P
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		P
	Stranded conductor test, 8 mm insulation removed		P
	No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		P
26.6	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm^2)..		N/A
	Terminals only suitable for a specially prepared cord		P
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		P
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		N/A

26.9	Terminals of the pillar type constructed and located as specified		N/A
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals		N/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		N/A
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		N/A

27	PROVISION FOR EARTHING		—
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet		P
	Earthing terminals not connected to neutral terminal		P
	Class 0, II and III appliance have no provision for earthing		N/A
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N/A
27.2	Clamping means adequately secured against accidental loosening		P
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm^2, and		N/A
	do not provide earthing continuity between different parts of the appliance		N/A
	Conductors cannot be loosened without the aid of a tool		P
27.3	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		P

	If a detachable part having an earth connection is plugged into another part of the appliance, the earth connection shall be made before the current-carrying connections are established. The current-carrying connections shall be separated before the earth connection when removing the part. (IEC 60335-1/A1)		N/A
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		N/A
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		N/A
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		N/A
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		P
	In case of aluminium alloys precautions taken to avoid risk of corrosion		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test	18 mΩ	P
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances		N/A
	They may be used in other appliances if:		—
	- at least two tracks are used with independent soldering points and the appliance complies with requirements of 27.5 for each circuit		N/A
	- the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5		N/A

28	SCREWS AND CONNECTIONS		—
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm		N/A
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screw into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		P
	Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		P
	For screws and nuts; test as specified	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		N/A
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Such screws not used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action		N/A

	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		P
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N/A

29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		—
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	If coatings are used on printed circuit boards to protect the microenvironment (Type A coating) or to provide basic insulation (Type B coating), Annex J applies. The microenvironment is pollution degree 1 under Type A coating. There are no creepage distance or clearance requirements under Type B coating. (IEC 60335-1/A1)		N/A
29.1	Clearances shall not be less than the values specified in Table 16, taking into account the rated impulse voltage for the overvoltage categories of Table 15, unless, for basic insulation and functional insulation, they comply with the impulse voltage test of Clause 14.However, if the construction is such that the distances could be affected by wear, by distortion, by movement of the parts or during assembly, the clearances for rated impulse voltages of 1 500 V and above are increased by 0,5 mm and the impulse voltage test is not applicable. (IEC 60335-1/A1)		P
	The impulse voltage test is not applicable when the microenvironment is pollution degree 3 or for basic insulation of class 0 appliances and class 0I appliances. (IEC 60335-1/A1)		N/A
	Appliances are in overvoltage category II		P
	Compliance is checked by inspection and measurements as specified		P

29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings are considered to be bare conductors. (IEC 60335-1/A1)		P
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16		N/A
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage		N/A
29.1.4	For functional insulation, the values of table 16 are applicable, unless		N/A
	the appliance complies with clause 19 with the functional insulation short-circuited		N/A
	Clearances at crossover points of lacquered conductors not measured		P
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
	Lacquered conductors of windings are considered to be bare conductors. However, clearances at crossover points are not measured. (IEC 60335-1/A1)		P
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		N/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		N/A

29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		P
	Pollution degree 2 applies, unless		P
	precautions taken to protect the insulation; pollution degree 1		N/A
	insulation subjected to conductive pollution; pollution degree 3		N/A
	Compliance is checked by inspection and measurements as specified		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P
	For pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17		N/A
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		N/A
29.2.4	Creepage distances of functional insulation not less than specified in table 18		N/A
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
29.3	Supplementary insulation and reinforced insulation shall have adequate thickness, or have a sufficient number of layers, to withstand the electrical stresses that can be expected during the use of the appliance. (IEC 60335-1/A1)		N/A
29.3.1	The thickness of the insulation shall be at least (IEC 60335-1/A1)		—
	- 1 mm for supplementary insulation; (IEC 60335-1/A1)		N/A
	- 2 mm for reinforced insulation. (IEC 60335-1/A1)		N/A

29.3.2	Each layer of material shall withstand the electric strength test of 16.3 for supplementary insulation. Supplementary insulation shall consist of at least 2 layers of material and reinforced insulation of at least 3 layers. (IEC 60335-1/A1)		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2 for 48 h at a temperature of 50 K in excess of the maximum temperature rise measured during the test of Clause 19. At the end of the period, the insulation is subjected to the electric strength test of 16.3 at the conditioning temperature and also after it has cooled down to room temperature. (IEC 60335-1/A1)		N/A

30	RESISTANCE TO HEAT AND FIRE		—
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		N/A
	thermoplastic material providing supplementary or reinforced insulation,		N/A
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)		P
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C)		N/A
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)		N/A
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		P
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless		P
	the material is classified at least HB40 according to IEC 60695-11-10		N/A

	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		N/A
	Test not applicable to conditions as specified		N/A
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and		N/A
	parts of insulating material within a distance of 3mm,		N/A
	having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12		N/A
30.2.3.2	Parts of insulating material supporting current-carrying connections, and		N/A
	parts of insulating material within a distance of 3mm,		N/A
	subjected to glow-wire test of IEC 60695-2-11		N/A
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 as specified		N/A
	Glow-wire test of IEC 60695-2-11, the temperature being:		—
	- 750°C, for connections carrying a current exceeding 0,2A during normal operation		N/A
	- 650°C, for other connections		N/A
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified		N/A
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N/A
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N/A
	Test not applicable to conditions as specified		N/A

31	RESISTANCE TO RUSTING		—
	Relevant ferrous parts adequately protected against rusting		P

32	RADIATION, TOXICITY AND SIMILAR HAZARDS		—
	Appliance does not emit harmful radiation		P
	Appliance does not present a toxic or similar hazard		P

A	ANNEX A (INFORMATIVE) ROUTINE TESTS		—
	Description of routine tests to be carried out by the manufacturer		P

B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		—
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N/A
	This annex does not apply to battery chargers		N/A
3.1.9	Appliance operated under the following conditions:		—
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N/A
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A

7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N/A
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N/A
	Details about how to remove batteries containing materials hazardous to the environment given		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period described		N/A
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N/A
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		N/A
19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		—
	- 100, the mass of part does not exceed 250 g		N/A
	- 50, the mass of part exceeds 250 g		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A

22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A

C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		—
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N/A

D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		—
	Applicable to appliances having motors that incorporate thermal motor protectors		P

E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		—
	Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications:		N/A
5	Severities		——
	The duration of application of the test flame is 30 s ± 1 s		N/A
8	Test procedure		——
8.2	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N/A
8.4	The first paragraph does not apply		N/A
	If possible, the flame is applied at least 10 mm from a corner		N/A
8.5	The test is carried out on one specimen		N/A

	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N/A
10	Evaluation of test results		——
	The duration of burning not exceeding 30 s		N/A
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N/A

F	ANNEX F (NORMATIVE) CAPACITORS		—
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		N/A
1.5	Terminology		——
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		——
	Items a) and b) are applicable		N/A
3.4	Approval testing		——
3.4.3.2	Table II is applicable as described		N/A
4.1	Visual examination and check of dimensions		——
	This subclause is applicable		N/A
4.2	Electrical tests		——
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		N/A
4.2.5.2	Only table IX is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A
4.12	Damp heat, steady state		——

	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A
4.13	Impulse voltage		——
	This subclause is applicable		N/A
4.14	Endurance		——
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	Visual examination, no visible damage		N/A
4.17	Passive flammability test		——
	This subclause is applicable		N/A
4.18	Active flammability test		——
	This subclause is applicable		N/A

G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		—
	The following modifications to this standard are applicable for safety isolating transformers:		N/A
7	Marking and instructions		——
7.1	Transformers for specific use marked with:		——
	-name, trademark or identification mark of the manufacturer or responsible vendor		N/A
	-model or type reference		N/A
17	Overload protection of transformers and associated circuits		——
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		——
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A

29	Clearances, creepage distances and solid insulation		——
29.1, 29.2 and 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A

H	ANNEX H (NORMATIVE) SWITCHES		—
	Switches comply with the following clauses of IEC 61058-1, as modified:		——
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	-Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		——
	Switches are not required to be marked		N/A
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		——
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		——
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		——
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N/A
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N/A

	Subclauses 17.2.2 and 17.2.5.2 not applicable (IEC 60335-1:2001/A1)		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1 (IEC 60335-1:2001/A1)		N/A
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		——
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		N/A

I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		—
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		N/A
8	Protection against access to live parts		——
8.1	Metal parts of the motor are considered to be bare live parts		N/A
11	Heating		——
11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N/A
11.8	Temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N/A
16	Leakage current and electric strength		——
16.3	Insulation between live parts of the motor and its other metal parts not subjected to the test		N/A
19	Abnormal operation		——
19.1	The tests of 19.7 to 19.9 not carried out		N/A

19.101	Appliance operated at rated voltage with each of the following fault conditions:		——
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
22	Construction		——
22.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A

J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		—
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A
6.6	Climatic sequence		——
	When production samples are used, three samples of the printed circuit board are tested		N/A
6.6.1	Cold		——
	The test is carried out at -25°C		N/A
6.6.3	Rapid change of temperature		——
	Severity 1 is specified		N/A
6.8.6	Partial discharge extinction voltage		——
	Type A coatings not subjected to a partial discharge test		N/A
6.9	Additional tests		——

	This subclause is not applicable		N/A

K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		—
	The information on overvoltage categories is extracted from IEC 60664-1		N/A
	Overvoltage category is a numeral defining a transient overvoltage condition		N/A
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		N/A
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A

L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		—
	Sequences for the determination of clearances and creepage distances		P

M	ANNEX M (NORMATIVE) POLLUTION DEGREE		—
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		—
	The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		P

	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		—
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		—
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N/A
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A

N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		—
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		N/A
7	Test apparatus		—
7.3	Test solutions		—
	Test solution A is used (IEC 60335-1:2001/A1)		N/A
10	Determination of proof tracking index (PTI) (IEC 60335-1:2001/A1)		—
10.1	Procedure (IEC 60335-1:2001/A1)		—
	The proof voltage is 100V, 175V, 400V or 600V.. (IEC 60335-1:2001/A1)		N/A
	The last paragraph of Clause 3 applies (IEC 60335-1:2001/A1)		N/A

	The test is carried out on five specimens (IEC 60335-1:2001/A1)		N/A
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100 (IEC 60335-1:2001/A1)		N/A
10.2	Report		—
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V (IEC 60335-1:2001/A1)		N/A

O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		—
	Description of tests for determination of resistance to heat and fire		P

P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES (IEC 60335-1:2001/A1)		—
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE (IEC 60335-1:2001/A1)		——
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE, if liable to be connected to a supply mains that excludes the protective earthing conductor (IEC 60335-1:2001/A1)		——
5	General conditions for the tests (IEC 60335-1:2001/A1)		—
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 $^{+3}/_{0}$ (IEC 60335-1:2001/A1)		N/A
7	Marking and instructions (IEC 60335-1:2001/A1)		—
7.1	The appliance marked with the letters WDaE (IEC 60335-1:2001/A1)		N/A
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA (IEC 60335-1:2001/A1)		N/A

	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries (IEC 60335-1:2001/A1)		N/A
11	Heating (IEC 60335-1:2001/A1)		—
11.8	The values of Table 3 are reduced by 15 K (IEC 60335-1:2001/A1)		N/A
13	Leakage current and electric strength at operating temperature (IEC 60335-1:2001/A1)		—
13.2	The leakage current for class I appliances not exceeding 0,5 mA (IEC 60335-1:2001/A1)		N/A
15	Moisture resistance (IEC 60335-1:2001/A1)		—
15.3	The value of t is 37 °C (IEC 60335-1:2001/A1)		N/A
16	Leakage current and electric strength (IEC 60335-1:2001/A1)		—
16.2	The leakage current for class I appliances not exceeding 0,5 mA (IEC 60335-1:2001/A1)		N/A
19	Abnormal operation (IEC 60335-1:2001/A1)		—
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3 (IEC 60335-1:2001/A1)		N/A

Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS	—
	Description of tests for appliances incorporating electronic circuits (IEC 60335-1:2001/A1)	——

R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION (IEC 60335-1:2001/A1)	—
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified (IEC 60335-1:2001/A1)	—
H.2	Definitions (IEC 60335-1:2001/A1)	—

	Only definitions H.2.16 to H.2.20 applicable (IEC 60335-1:2001/A1)		N/A
H.7	Information (IEC 60335-1:2001/A1)		—
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable (IEC 60335-1:2001/A1)		N/A
H.11.12	Controls using software (IEC 60335-1:2001/A1)		—
	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable (IEC 60335-1:2001/A1)		N/A
H.11.12.7	Delete text (IEC 60335-1:2001/A1)		—
H.11.12.7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data (IEC 60335-1:2001/A1)		N/A
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired (IEC 60335-1:2001/A1)		N/A
H.11.12.8.1	Replace text (IEC 60335-1:2001/A1)		N/A
H.11.12.13	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired (IEC 60335-1:2001/A1)		N/A

Appendix 2: Tables with test results
Photos of the appliances

Tables:

10.1	TABLE: Power input deviation				
Input deviation of/at:	P rated (W)	P measured (W)	dP	Required dP	Remark
AR700	260	200	-23	+20	P
AR135	482	400	-17	+15	P

11.8	TABLE: Heating test, thermocouples		
	Test voltage (V) ..... :	244	—
	Ambient (°C) ..... :	17	—

Thermocouple locations	dT (K)	Max. dT (K)
Capacitor	25	45 (T70)

11.8	TABLE: Heating test, resistance method				
	Test voltage (V) ..... :	244	—		
	Ambient, t_1 (°C) ..... :	15	—		
	Ambient, t_2 (°C) ..... :	17	—		
Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
AR700	30.7	37.8	56	115	155

11.8	TABLE: Heating test, resistance method				
	Test voltage (V) ..... :	244	—		
	Ambient, t_1 (°C) ..... :	18	—		
	Ambient, t_2 (°C) ..... :	19	—		
Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
AR135	13.0	16.0	57	115	155

13.2	TABLE: Leakage current		
	Heating appliances: 1.15 x rated input.....:		—
	Motor-operated and combined appliances: 1.06 x rated voltage .....:	244	—

Leakage current between	I (mA)	Max. allowed I (mA)
Earthed metal parts and L	0.29	3.5
Earthed metal parts and N	0.18	3.5

13.3	TABLE: Electric strength	

Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Live parts and accessible metal parts	1000	No

16.2	TABLE: Leakage current		
	Single phase appliances: 1.06 x rated voltage .....:	244	—
	Three phase appliances 1.06 x rated voltage divided by √3: .....:		—

Leakage current between	I (mA)	Max. allowed I (mA)
Live parts and earthed metal parts	0.25	3.5

16.3	TABLE: Electric strength	

Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Live parts and accessible metal parts	1250	No

19.7	TABLE: Abnormal operation, locked rotor/moving parts		
	Test voltage (V) ..... :	230	—
	Ambient, t_1 (°C) .....:	18	—
	Ambient, t_2 (°C) .....:	18	—

Temperature of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)
AR700	-	-	-	182	240
AR135				115	240

24.1	TABLE: Components				
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Pump (AR700)	Tahizou Xinhongji Pump Co. Ltd	TIPO-2	230 V, 50 Hz, 260 W	IEC 60335-2-41	CB / SH08070512-001
Pump (AR135)	Metalast	Compact	230 V, 50 Hz, 482 W	IEC 60335-2-41	TUV / 71306627
Cord (AR135)	Yaoyang Electric Cable	H07RN-F	3G1 mm^2		VDE
Cord (AR700)	Shanghai Chuangqi Cable	H05RN-F	3G1 mm^2		VDE
Plug (AR135)	Qiaopu	D03-F	250 V, 16 A		VDE
Plug (AR700)		GT-13A	250 V, 16 A		VDE
[1)] An asterisk indicates a mark which assures the agreed level of surveillance					

28.1	TABLE: Threaded part torque test		

Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Screws	3.8	II	1.2

29.1	TABLE: Clearances					
	Overvoltage category....:					—
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5					N/A
500	0,5					N/A
800	0,5					N/A
1 500	0,5					N/A
2 500	1,5	X	X			P
4 000	3,0					N/A
6 000	5,5					N/A
8 000	8,0					N/A
10 000	11,0					N/A

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9		—	—	N/A
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	—		—	N/A
>50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	—	—		N/A
>50 and ≤ 125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		—	—	N/A
>50 and ≤ 125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	—		—	N/A
>50 and ≤ 125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	—	—		N/A
>125 and ≤ 250	0,6	1,3	1,8	2,5	3,2	3,6	4,0		—	—	P
>125 and ≤ 250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	—			N/A
>125 and ≤ 250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	—	—		N/A
>250 and ≤ 400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		—	—	N/A
>250 and ≤ 400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	—		—	N/A
>250 and ≤ 400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	—	—		N/A
>400 and ≤ 500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		—	—	N/A
>400 and ≤ 500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	—		—	N/A
>400 and ≤ 500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
>500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A
>500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
>500 and ≤ 800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N/A
>800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N/A
>800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N/A
>800 and ≤ 1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N/A
>1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N/A
>1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	N/A
>1000 and ≤ 1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		N/A
>1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	N/A
>1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	N/A
>1250 and ≤ 1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		N/A

>1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	N/A
>1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	N/A
>1600 and ≤ 2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		N/A
>2000 and ≤ 2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0		—	—	N/A
>2000 and ≤ 2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0	—		—	N/A
>2000 and ≤ 2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		N/A
>2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	N/A
>2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	N/A
>2500 and ≤ 3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		N/A
>3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	N/A
>3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	N/A
>3200 and ≤ 4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		N/A
>4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	N/A
>4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	N/A
>4000 and ≤ 5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		N/A
>5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	N/A
>5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	N/A
>5000 and ≤ 6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		N/A
>6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	N/A
>6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	N/A
>6300 and ≤ 8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		N/A
>8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	N/A
>8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—			N/A
>8000 and ≤ 10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		N/A
>10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	N/A
>10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	N/A
>10000 and ≤ 12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		N/A
*), B=Basic, S=Supplementary and R=Reinforced											

29.2	TABLE: Creepage distances, functional insulation							
Working voltage (V)	Creepage distance (mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	Verdict / Remark
> 50	0,2	0,6	0,8	1,1	1,4	1,6	1,8	N/A
>50 and ≤ 125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	N/A
>125 and ≤ 250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	P
>250 and ≤ 400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	N/A
>400 and ≤ 500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
>800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
>1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
>1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
>1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
>2000 and ≤ 2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A
>2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
>3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
>4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
>5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
>6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
>8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
>10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A

30.1	TABLE: Ball pressure		
Part	Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)
AR700 lower enclosure	75	0.8	2
AR700 upper pump enclosure	75	1.5	2
Tank	75	0.7	2
AR135 base	75	1.2	2

ANNEX 1 - PHOTO

Model AR700

Model AR135

		Ref. Certif. No.
IEC IECEE CB SCHEME		**SE-57407**

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Motor of water pump
Name and address of the applicant Nom et adresse du demandeur	Metalast SAU Psg Sanllehy 25 E-08213 Polinyà, SPAIN
Name and address of the manufacturer Nom et adresse du fabricant	Same as above
Name and address of the factory Nom et adresse de l'usine	Taizhou Xinhongji Pump Co., Ltd. Dayang Industrial Zone Daxi, Wenling, CHINA
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	230 V, 50 Hz, 260 W, Class I Hmin: 3 m, Max. Liquid Temp.: 35°C
Trademark (if any) Marque de fabrique (si elle existe)	-
Model / Type Ref. Ref. De type	00650R0006GIRX
Additional information (if necessary) Les informations complémentaires (si nécessaire)	-
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60335-1:2001+A1 IEC 60335-2-41:2002+A1 Group and national differences for the CENELEC countries
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	SH09030367-001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme **National de Certification**

Intertek Semko AB
Box 1103
SE-164 22 Kista, Sweden
Int +46 8 750 00 00

Intertek ETL SEMKO

Signature:

Date: 17 March 2009

Wolfram Zeitz

上海漕河泾开发区钦州北路 1198 号 86 号楼
邮编：200233

电话： 86 21 6127 8200
传真： 86 21 5426 2346
www.intertek-etlsemko.com

Intertek Testing Services, Spain

Pump

TEST REPORT

Reference No. SH09030367-001 **Issued date: 2009-03-09**

Intertek

TEST REPORT

IEC / EN 60335-2-41
Safety of household and similar electrical appliances
Part 2: Particular requirements for pumps

Report Reference No. ..... :	SH09030367-001
Tested by (name + signature)..... :	Ping He
Witnessed by (name + signature)..... :	-
Supervised by (name + signature).... :	-
Approved by (name + signature) ..... :	Andrew Huang
Date of issue..... :	March 9, 2009

CB Testing Laboratory ..... :	Intertek Testing Services Ltd. Shanghai
Address..... :	Building No. 86, 1198 Qinzhou Road (North), Shanghai 200233, China
Testing location/ procedure ..... :	CBTL☒ RMT ☐ SMT☐ WMT ☐ TMP☐
Testing location/ address..... :	As above
Applicant's name ..... :	Metalast, SAU
Address..... :	Psg Sanllehy 25, E-08213 Polinyà, Spain
Test specification:	
Standard ..... :	IEC 60335-2-41:2002 (Third edition) + A1:2004 used in conjunction with IEC 60335-1:2001 (Fourth Edition) modified + A1:2004 and/or EN 60335-2-41:2003 + A11:2004 + A1:2004 and EN 50366:2003
Test procedure..... :	CB scheme
Non-standard test method..... :	N/A
Test Report Form No. ..... :	IECEN60335_2_41B
Test Report Form(s) Originator ..... :	VDE
Master TRF..... :	Dated 2005-09

Copyright © 2005 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

Test item description ..... :	Motor of Water Pump
Trade Mark ..... :	-
Manufacturer ..... :	Metalast, SAU
	Psg Sanllehy 25, E-08213 Polinyà, Spain
Model/Type reference ..... :	00650R0006GIRX
Ratings ..... :	230V, 50Hz, 260W, H_{min}: 3 m, Max. Liquid Temp.: 35°C

Copy of marking plate

N.I.F.: A08246274 CE MODELO: 00650R0006GIRX

Passeig de Sanllehy, 25 – 08213 Polinyà (Barcelona) SPAIN

REF: 01/08			N° SERIE: S08010001		
Q	2 - 7	m³/h	H	6 – 3	m
V	230	V	I	1,2	A ~ 1
P1	0,26	kW	P2	0,15	kW
N	2800	r/min	50 Hz Class I		
H max	7	m	Max liquid temperature= 35°C		
H min	3	m	Ins. Class 155		Cond. 6uF

Summary of testing:

From the result of our inspection and tests on the submitted samples, we conclude that they **comply** with the necessary requirements of the standards.

Test item particulars ..... :	
Classification of installation and use ..... :	NA (evaluated as a component)
Supply Connection ..... :	NA (evaluated as a component)
..... :	
..... :	
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P(Pass)
- test object does not meet the requirement ..... :	F(Fail)
Testing ..... :	
Date of receipt of test item ..... :	March 6, 2009
Date (s) of performance of tests ..... :	March 6 – March 9, 2009
Product verification per IECEE 02, Clause 6.2.5:	
Steps taken by the NCB to ensure that the products from all the factories stated in the CB Test Certificate are equal	

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Note: EN Group Differences together with National Differences and Special National Conditions, if any, are in the Appendix to the main body of this TRF.

Throughout this report a comma is used as the decimal separator.

General product information / Additional remarks :

The basic part of this report covers the assessment of the general IEC requirements.

The APPENDIX 1 includes the assessment of all group differences and national deviations to complete the assessment for CENELEC countries (according the last valid edition of the CB-Bulletin and the relevant EN standards).

The APPENDIX 2 includes all tables with the test results and photos of the appliances.

The APPENDIX 3 (if any) includes the assessment of further national differences as requested by the applicant (according to the last valid edition of the CB-Bulletin).

The product covered by this test report is a model of motor dedicated for water pumps only.

Conditions of Acceptability

The features that should be considered in determining the acceptability of these pumps in specific application are indicated below.

1. The pump mounting means and strain relief must be evaluated for each end use.
2. Protection against electric shock and personal injury shall be evaluated in end use product.
3. The pumps do not provide the lead terminations. They must be evaluated in the ultimate use.
4. Where leads are terminated in connectors, the acceptability of the connectors must be determined in the end-use application. Where the connectors are mounted on the motor, the means of mounting must also be evaluated.
5. Protection for capacitors against mechanical damage and emission of flame or molten material resulting from malfunction or breakdown of the capacitors needs to be evaluated for each end use.
6. The grounding construction and continuity shall be evaluated for each end use.
7. Protection against moisture shall be evaluated in the end product.
8. Temperature Test should be performed on this component when installed in the end product; the temperature test covered by this test report is for reference only.
9. Temperature for Ball Pressure Test may be higher if the subjected parts gain high temperature rise in Temperature Test.

Factory information:
Name: Taizhou Xinhongji Pump Co., Ltd.
Address: Dayang Industrial Zone, Daxi, Wenling, China

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
5	GENERAL CONDITIONS FOR THE TESTS		---
	Tests performed according to cl. 5, e.g. nature of supply, sequence of testing, etc.		P
5.2	If the test of Annex D has to be carried out, an additional appliance may be used. (IEC 60335-1/A1)		P
5.3	The tests of Clause 14 and 21.2 and 22.24 are carried out after the tests of Clause 29. (IEC 60335-1/A1)		N/A
5.7	Temperature of liquid is maintained within +0, -5K of the temperaturemarked on the pumb. (IEC 60 335-2-41)		N/A
5.14	NOTE: Guidance is given in Annex P for enhanced requirements that may be used to ensure an acceptable level of protection against electrical and thermal hazards for particular types of appliances used in an installation without a protective earthing conductor in countries that have warm damp equable climates. (IEC 60335-1/A1)		N/A
5.101	Pumps are tested as portable appliances, unless they are intended to be fixed (IEC 60 335-2-41)	Motor tested as a component. Relative requirements need to be evaluated in end product	N/A
5.102	Stationary pumps having a three-phase motor which does not incorporate a protective device are installed with an appropiate device, in accordance with the instructions (IEC 60 335-2-41)		N/A

6	CLASSIFICATION		---
6.1	Protection against electric shock: Class 0, 0I, I, II, III	Class I	P
	Submersible pumps for use in swimming pools when persons are in the pool shall be of class III with a rated voltage < 12V (IEC 60 335-2-41)		N/A
	Other submersible pumps for use in water and other conducting liquids shall be of class I or class III. However, aquarium pumps may be of class II (IEC 60 335-2-41)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Portable pumps for cleaning and other maintenance of swimming pools shall be of class I or class III (IEC 60 335-2-41)		N/A
	Other pumps shall be class I, class II or class III (IEC 60 335-2-41)		N/A
	Table fountain pumps for indoor use may also be class II as long as their rated power input does not exceed 25 W. (IEC 60 335-2-41/A1)		N/A
6.2	Submersible pumps shall be at least IP X8 (IEC 60 335-2-41)		N/A
	Portable pumps for cleaning and other maintenance of swimming pools shall be at least IP X7 (IEC 60 335-2-41)		N/A
	Other pumps shall be at least IP X4 (IEC 60 335-2-41)	Motor tested as a component. Relative requirements need to be evaluated in end product	N/A
	Shower-boost pumps intended for installation outside of zones 1 and 2, as specified in IEC 60364-7-701, shall be at least IPX2. (IEC 60 335-2-41/A1)		N/A

7	MARKING AND INSTRUCTIONS		—
7.1	Rated voltage or voltage range (V).....	230	P
	Nature of supply.....	Rated frequency marked	N/A
	Rated frequency (Hz).....	50	P
	Rated power input (W):.....	260	P
	Rated current (A)		N/A
	Manufacturer's or responsible vendor's name, trademark or identification mark.....	Refer to marking plate	P
	Model or type reference.....	Ditto	P
	Symbol 5172 of IEC 60417, for Class II appliances		N/A
	IP number, other than IPX0.....	Need to be evaluated in the end product	N/A
	The enclosure of electrically-operated water valves incorporated in external hose-sets for connection of an appliance to the water mains shall be marked with symbol IEC 60417-5036 (DB:2002-10) if their working voltage exceeds extra-low voltage. (IEC 60335-1/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Pumps having a rated power input exceeding 50 W shall be marked with: (IEC 60 335-2-41)		—
	-the minimum total head in metres, if > 0 metres) (IEC 60 335-2-41)	3 m	P
	-the maximum operating depth in metres, if > 1 metres (for submersible pumps) (IEC 60 335-2-41)	Not for submersible pump	N/A
	-the direction of rotation (three phase motor only) (IEC 60 335-2-41)		N/A
	Pumps shall be marked with the maximum liquid temperature which shall not be less than 35°C. (IEC 60 335-2-41)		P
	If the temperature exceeds 35 °C, they shall be marked with the maximum period of operation, unless they are intended for continuous operation. (IEC 60 335-2-41)		N/A
7.2	Warning for stationary appliances for multiple supply		N/A
	Warning placed in vicinity of terminal cover		N/A
7.3	Range of rated values marked with the lower and upper limits separated by a hyphen		N/A
	Different rated values marked with the values separated by an oblique stroke		N/A
7.4	Appliances adjustable for different rated voltages, the voltage setting is clearly discernible		N/A
7.5	Appliances with more than one rated voltage or one or more rated voltage ranges, marked with rated input or rated current for each rated voltage or range, unless		N/A
	the power input is related to the mean value of the rated voltage range		N/A
	Relation between marking for upper and lower limits of rated power input or rated current and voltage is clear		N/A
7.6	Correct symbols used		P
	[symbol IEC 60417-5021 (DB:2002-10)] equipotentiality (IEC 60335-1/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	symbol IEC 60417-5036 (DB:2002-10)] dangerous voltage (IEC 60335-1/A1)		N/A
7.7	Connection diagram fixed to appliances to be connected to more than two supply conductors and appliances for multiple supply		N/A
7.8	Except for type Z attachment, terminals for connection to the supply mains indicated as follows:		—
	- marking of terminals exclusively for the neutral conductor (N)		N/A
	- marking of protective earthing terminals (symbol 5019 of IEC 60417)		N/A
	- marking not placed on removable parts		N/A
7.9	Marking or placing of switches which may cause a hazard		N/A
7.10	Indications of switches on stationary appliances and controls on all appliances by use of figures, letters or other visual means.....		N/A
	The figure 0 indicates only OFF position, unless no confusion with the OFF position		N/A
7.11	Indication for direction of adjustment of controls		N/A
7.12	Instructions for safe use provided	Relative information needs to be checked in the manual for end products	N/A
	The instruction for use of class I portable pumps for cleaning and other maintenance of swimming pools shall include the substance of the following: (IEC 60 335-2-41)		—
	-the pump must not be used when people are staying in the water (IEC 60 335-2-41)		N/A
	-the pump must supplied through a residual current device (RCD) with a rated residual operating current < 30 mA (IEC 60 335-2-41)		N/A
	The instructions for use for pumps marked with a temperature exceeding 35 °C shall state the maximum period of operation and the minimum rest period, unless the pump is intended for continuous operation at this temperature. (IEC 60 335-2-41)		N/A
7.12.1	Sufficient details for installation supplied		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	The installation instruction shall provide information on requirements specified for the electrical installation and shall include reference to national wiring rules		N/A
	If reference is made to zones, the corresponding shall be included		N/A
	The installation instruction shall state the substance of the following: (IEC 60 335-2-41)		—
	- the maximum total head, in meters (for pumps having a rated power input >50W) (IEC 60 335-2-41)		N/A
	- pollution of the liquid could occur due to leakage of lubricants (for submersible pumps and vertical wet pit pumps containing lubricants) (IEC 60 335-2-41)		N/A
	- Additional information for installation of stationary pumps having a three-phase motor not incorporating a protective device as specified (IEC 60 335-2-41)		N/A
	The instructions for installation shall state that pumps for outdoor fountains, garden ponds and similar places have to be supplied through a RCD (operating current < 30 mA) (IEC 60 335-2-41)		N/A
	The instructions for installation shall give full informations for installation of class I pumps for operating in swimming pools as specified (IEC 60 335-2-41)		N/A
	The installation instructions for class III pumps intended to be installed in zone 0 of a swimming pool shall state that the transformer is located outside zone1 (IEC 60 335-2-41)		N/A
	The installation instructions for class II pumps intended to be fixed in zone 1 of a swimming pool, or fixed close to a garden pond or similar place, shall state that the pump is to be located where flooding cannot occur (IEC 60 335-2-41)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
7.12.2	Stationary appliances not fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III, the instructions state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules		N/A
7.12.3	Insulation of the fixed wiring in contact with parts exceeding 50 K during clause 11; instructions stating that the fixed wiring must be protected		N/A
7.12.4	Instructions for built-in appliances:		—
	- dimensions of space		N/A
	- dimensions and position of supporting means		N/A
	- distances between parts and surrounding structure		N/A
	- dimensions of ventilation openings and arrangement		N/A
	- connection to supply mains and interconnection of separate components		N/A
	- necessity to allow disconnection of the appliance from the supply after installation, unless the appliance incorporates a switch complying with 24.3. (IEC 60335-1/A1)		N/A
	The disconnection may be achieved by having the plug accessible or by incorporating a switch in the fixed wiring in accordance with the wiring rules. (IEC 60335-1/A1)		N/A
7.12.5	Replacement cord instructions, type X attachment with a specially prepared cord		N/A
	Replacement cord instructions, type Y attachment		N/A
	Replacement cord instructions, type Z attachment		N/A
7.12.6	The instructions for heating appliances incorporating a non-self-resetting thermal cut-out that is reset by disconnection of the supply mains shall contain the substance of the following: (IEC 60335-1/A1)		—

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	CAUTION: In order to avoid a hazard due to inadvertent resetting of the thermal cut-out, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility. (IEC 60335-1/A1)		N/A
7.12.7	The instructions for fixed appliances shall state how the appliance is to be fixed to its support. (IEC 60335-1/A1)		N/A
7.12.8	The instructions for appliances connected to the water mains shall state (IEC 60335-1/A1)		---
	- the maximum inlet water pressure, in pascals; (IEC 60335-1/A1)		N/A
	- the minimum inlet water pressure, in pascals, if this is necessary for the correct operation of the appliance. (IEC 60335-1/A1)		N/A
	The instructions for appliances connected to the water mains by detachable hose-sets shall state that the new hose-sets supplied with the appliance are to be used and that old hose-sets should not be reused. (IEC 60335-1/A1)		N/A
7.13	Instructions and other texts in an official language		N/A
7.14	Marking clearly legible and durable		N/A
7.15	Marking on a main part		N/A
	Marking clearly discernible from the outside, if necessary after removal of a cover		N/A
	For portable appliances, cover can be removed or opened without a tool		N/A
	For stationary appliances, name, trademark or identification mark and model or type reference visible after installation		N/A
	For fixed appliances, name, trademark or identification mark and model or type reference visible after installation according to the instructions		N/A
	Indications for switches and controls placed on or near the components. Marking not on parts which can be positioned or repositioned in such a way that the marking is misleading		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
7.16	Marking of a possible replaceable thermal link or fuse link clearly visible with regard to replacing the link		N/A

8	PROTECTION AGAINST ACCESS TO LIVE PARTS		—
8.1	Adequate protection against accidental contact with live parts	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
8.1.1	Requirement applies for all positions, detachable parts removed		N/A
	Insertion or removal of lamps, protection against contact with live parts of the lamp cap		N/A
	Use of test probe B of IEC 61032: no contact with live parts		N/A
8.1.2	Use of test probe 13 of IEC 61032 through openings in class 0 appliances and class II appliances/ constructions: no contact with live parts		N/A
	Test probe 13 also applied through openings in earthed metal enclosures having a non-conductive coating: no contact with live parts		N/A
8.1.3	For appliances other than class II, use of test probe 41 of IEC 61032: no contact with live parts of visible glowing heating elements		N/A
8.1.4	Accessible part not considered live if:		—
	- safety extra-low a.c. voltage: peak value not exceeding 42.4 V		N/A
	- safety extra-low d.c. voltage: not exceeding 42.4 V		N/A
	- or separated from live parts by protective impedance		N/A
	If protective impedance: d.c. current not exceeding 2 mA, and		N/A
	a.c. peak value not exceeding 0.7 mA		N/A
	- for peak values over 42.4 V up to and including 450 V, capacitance not exceeding 0,1 μF		N/A
	- for peak values over 450 V up to and including 15 kV, discharge not exceeding 45 μC		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	The quantity of electricity in the discharge is measured using a resistor having a nominal non-inductive resistance of 2 000 Ω (IEC 60335-1/A1)		N/A
8.1.5	Live parts protected at least by basic insulation before installation or assembly:		---
	- built-in appliances		N/A
	- fixed appliances		N/A
	- appliances delivered in separate units		N/A
8.2	Class II appliances and constructions constructed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only		N/A
	Only possible to touch parts separated from live parts by double or reinforced insulation		N/A

9	STARTING OF MOTOR-OPERATED APPLIANCES		---
	Requirements and tests are specified in part 2 when necessary		N/A

10	POWER INPUT AND CURRENT		---
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1		P
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2		N/A

11	HEATING		---
11.1	No excessive temperatures in normal use	Tested as a component for reference. Relative requirements shall be evaluated in the end products	P
11.2	Placing and mounting of appliance as described		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		P
	the windings makes it difficult to make the necessary connections		N/A
11.4	Heating appliances operated under normal operation at 1.15 times rated power input		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage	At 243,8V	P
11.6	Combined appliances operated under normal operation at most unfavourable voltage between 0.94 and 1.06 times rated voltage		N/A
11.7	Pumps are operated with the liquid maintained at the temperature marked on the pump. (IEC 60 335-2-41/A1)	35°C	P
	They are operated until steady conditions are established unless they are marked with a maximum period of operation. In this case, they are operated for the marked period followed by the rest period specified in the instructions, the test being carried out for three cycles of operation. (IEC 60 335-2-41/A1)	Until steady conditions established	P
	Shower-boost pumps that are also supplied with cold water are operated with the cold water at 15 °C ± 2 °C. (IEC 60 335-2-41/A1)		N/A
	Pumps, other than shower-boost pumps, marked with a maximum period of operation are also operated with the liquid maintained at 35 °C until steady conditions are established. (IEC 60 335-2-41/A1)		N/A
	If the pumb is marked with a maximum period of operation- - the liquid temperature is 35°C instead of the marked temperature; it is also operated for this period followed by the rest period specified in the instructions for use, the liquid being maintained at the marked temperature. This test is carried out for three cycles of operation. (IEC 60335-2-41)		N/A
11.8	Temperature rises not exceeding values in table 3	(see appended tables)	P
	Protective devices do not operate		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	However, components in protective electronic circuits are allowed to operate provided they are tested for the number of cycles of operation specified in 24.1.4 (IEC 60335-1/A1)		N/A
	The temperature rise limit does not apply to switches or controls tested in accordance with the conditions occurring in the appliance. (IEC 60335-1/A1)		N/A
	Sealing compound does not flow out		N/A
	For pumps marked with a temperature exceeding 35 °C, the temperature rise of the external enclosure is not measured. (IEC 60 335-2-41)		N/A

13	LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE		—
13.1	Leakage current not excessive and electric strength adequate	Tested as a component for reference. Relative requirements shall be evaluated in the end products	P
	Heating appliances operated at 1.15 times rated power input		N/A
	Motor-operated appliances and combined appliances supplied at 1.06 times rated voltage ..	243,8V	P
	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
13.2	Leakage current measured by means of the circuit described in figure 4 of IEC 60990		P
	Leakage current measurements	(see appended table)	P
13.3	The appliance is disconnected from the supply and the insulation is immediately subjected to a voltage having a frequency of 50 Hz or 60 Hz for 1 min, in accordance with IEC 61180-1. (IEC 60335-1/A1)		P
	The high-voltage source used for the test is to be capable of supplying a short circuit current Is between the output terminals after the output voltage has been adjusted to the appropriate test voltage. (IEC 60335-1/A1)		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	The overload release of the circuit is not to be operated by any current below the tripping current Ir. The values of Is and Ir are given in Table 5 for various high-voltage sources. (IEC 60335-1/A1)		P

14	TRANSIENT OVERVOLTAGES		—
	Appliances withstand the transient overvoltages to which they may be subjected		N/A
	Clearances having a value less than specified in table 16 subjected to an impulse voltage test, the test voltage specified in table 6	(see appended table)	N/A
	No flashover during the test, unless of functional insulation		N/A
	In case of flashover of functional insulation, the appliance complies with clause 19 with the clearance short circuited		N/A

15	MOISTURE RESISTANCE		—
15.1	Enclosure provides the degree of moisture protection according to classification of the appliance	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
	Compliance checked as specified in 15.1.1, taking into account 15.1.2, followed by the electric strength test of 16.3		N/A
	No trace of water on insulation which can result in a reduction of clearances and creepage distances below values specified in clause 29		N/A
15.1.1	Appliances, other than IPX0, subjected to tests as specified in IEC 60529		N/A
	Water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains are subjected to the test specified for IPX7 appliances. (IEC 60335-1/A1)		N/A
	Shower-boost pumps are subjected to the appropriate test of IEC 60529 both at rest and in operation while supplied at rated voltage. (IEC 60335-2-41/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
15.1.2	Hand-held appliance turned continuously through the most unfavourable positions during the test		N/A
	Built-in appliances installed according to the instructions		N/A
	Appliances placed or used on the floor or table placed on a horizontal unperforated support		N/A
	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted on a wooden board		N/A
	For IPX3 appliances, the base of wall mounted appliances is placed at the same level as the pivot axis of the oscillating tube		N/A
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube		N/A
	However, for appliances normally used on the floor or table, the movement is limited to two times 90° for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating tube		N/A
	Wall-mounted appliances, take into account the distance to the floor stated in the instructions		N/A
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support that is constructed to prevent water spraying onto its top surface. The pivot axis of the oscillating tube is located at the same level as the underside of the support and aligned centrally with the appliance. The spray is directed upwards. (IEC 60335-1/A1)		N/A
	For IPX4 appliances, the movement of the tube is limited to two times 90° from the vertical for a period of 5 min. (IEC 60335-1/A1)		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Detachable parts tested as specified		N/A
	IP X4 pumps are tested as specified (IEC 60 335-2-41)		N/A
	IP X7-pumps (submersible pumps) are immersed for 24 h in water as specified (IEC 60 335-2-41)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	– 1,5 times the pressure occurring at the maximum operation depth, when this depth does not exceed 10m (IEC 60 335-2-41)		N/A
	– 1,3 times the pressure occurring at • the maximum operating depth, or • 15 m, if this is higher. (IEC 60 335-2-41/A1)		N/A
15.2	Spillage of liquid does not affect the electrical insulation		N/A
	Appliances with type X attachment fitted with a flexible cord as described		N/A
	Appliances incorporating an appliance inlet tested with or without an connector, whichever is most unfavourable		N/A
	Detachable parts removed		N/A
	Overfilling test with additional amount of water, over a period of 1 min (l).....		N/A
	The appliance withstands the electric strength test of 16.3		N/A
	No trace of water on insulation that can result in a reduction of clearances and creepage distances below values specified in clause 29		N/A
15.3	Appliances proof against humid conditions		N/A
	Humidity test for 48 h in a humidity cabinet (not for submersible pumps) (IEC 60335-2-41)		N/A
	The appliance withstands the tests of clause 16		N/A

16	LEAKAGE CURRENT AND ELECTRIC STRENGTH		---
16.1	Leakage current not excessive and electric strength adequate	Tested as a component for reference. Relative requirements shall be evaluated in the end products	P
	Protective impedance disconnected from live parts before carrying out the tests		N/A
16.2	Single-phase appliances: test voltage 1.06 times rated voltage.....	243,8V	P
	Three-phase appliances: test voltage 1.06 times rated voltage divided by √3		N/A
	Leakage current measurements	(see appended table)	P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
16.3	Electric strength tests according to table 7	(see appended table)	P
	No breakdown during the tests		P

17	OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS		—
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use	(see appended table)	N/A
	Appliance supplied with 1.06 or 0.94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied.....		N/A
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N/A
	Temperature of the winding not exceeding the value specified in table 8,		N/A
	however limits do not apply to fail-safe transformers complying with sub-clause 15.5 of IEC 61558-1		N/A

18	ENDURANCE		—
	Requirements and tests are specified in part 2 when necessary		N/A

19	ABNORMAL OPERATION		—
19.1	The risk of fire or mechanical damage under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe		N/A
	Pumps are also subjected to the tests of 19.101 and 19.102 (IEC 60335-2-41)	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
19.2	Test of appliance with heating elements with restricted heat dissipation; test voltage (V): power input of 0.85 times rated power input		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
19.3	Test of 19.2 repeated; test voltage (V): power input of 1.24 times rated power input		N/A
19.4	Test conditions as in cl. 11, any control limiting the temperature during tests of cl. 11 short-circuited		N/A
19.5	Test of 19.4 repeated on Class 0I and I appliances with tubular sheathed or embedded heating elements. No short-circuiting, but one end of the element connected to the elements sheath		N/A
	The test repeated with reversed polarity and the other end of the heating element connected to the sheath		N/A
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		N/A
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		N/A
	The working voltage of the PTC heating element is increased by 5% and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage or until the PTC heating element ruptures		N/A
19.7	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		P
	Locked rotor, motor capacitors open-circuited or short-circuited, if required		P
	Locked rotor, capacitors open-circuited one at a time		P
	Test repeated with capacitors short-circuited one at a time, if required		P
	Appliances with timer or programmer supplied with rated voltage for each of the tests, for a period equal to the maximum period allowed		N/A
	Other appliances supplied with rated voltage for a period as specified		P
	Winding temperatures not exceeding values specified in table 8	(see appended table)	P
19.8	Three-phase motors operated at rated voltage with one phase disconnected		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
19.10	Series motor operated at 1.3 times rated voltage for 1 min.....		N/A
	During the test, parts not being ejected from the appliance		N/A
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		N/A
	Appliances incorporating a protective electronic circuit are subjected to the tests of 19.11.3 and 19.11.4. (IEC 60335-1/A1)		N/A
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch that can place the appliance in a stand-by mode, are subjected to the tests of 19.11.4. (IEC 60335-1/A1)		N/A
	During and after each test the following is checked:		—
	- the temperature rise of the windings do not exceed the values specified in table 8		N/A
	- the appliance complies with the conditions specified in 19.13		N/A
	- any current flowing through protective impedance not exceeding the limits specified in 8.1.4		N/A
	If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met:		—
	- the material of the printed circuit board withstands the burning test of annex E		N/A
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		N/A
	- the appliance withstands the tests of 19.11.2 with open-circuited conductor bridged		N/A
19.11.1	Before applying the fault conditions a) to f) in 19.11.2, it is checked if circuits or parts of circuit meet both of the following conditions:		—

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	- the electronic circuit is a low-power circuit, that is, the maximum power at low-power points does not exceed 15 W according to the tests specified		N/A
	- the protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction in other parts of the appliance does not rely on the correct functioning of the electronic circuit		N/A
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in cl. 11, but supplied at rated voltage, the duration of the tests as specified:		—
	a) short circuit of functional insulation if clearances or creepage distances are less than the values specified in 29		N/A
	b) open circuit at the terminals of any component		N/A
	c) short circuit of capacitors, unless they comply with IEC 60384-14		N/A
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the two circuits of an optocoupler		N/A
	e) failure of triacs in the diode mode		N/A
	f) failure of an integrated circuit.		N/A
	In each case, the test is ended if a non-self-resetting interruption of the supply occurs within the appliance. (IEC 60335-1/A1)		N/A
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with clause 19, the relevant test is repeated with a single fault simulated, as indicated in a) to f) of 19.11.2		N/A
19.11.4	Appliances having a switch with an off position obtained by electronic disconnection, or a switch that can be placed in the stand-by mode, are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out with the appliance supplied at rated voltage, the switch being set in the off position or in the stand-by mode. (IEC 60335-1/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Appliances incorporating a protective electronic circuit are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out after the protective electronic circuit has operated during the relevant tests of Clause 19 except 19.2, 19.6 and 19.11.3. However, appliances that are operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena. (IEC 60335-1/A1)		N/A
	The tests are carried out with surge arresters disconnected, unless they incorporate spark gaps (IEC 60335-1/A1)		N/A
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IEC 61000-4-2, test level 4 being applicable. Ten discharges having a positive polarity and ten discharges having a negative polarity are applied at each preselected point (IEC 60335-1/A1)		N/A
19.11.4.2	The appliance is subjected to radiated fields in accordance with IEC 61000-4-3, test level 3 being applicable. (IEC 60335-1/A1)		N/A
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IEC 61000-4-4. Test level 3 s applicable for signal and control lines. Test level 4 is applicable for the power supply lines. The bursts are applied for 2 min with a positive polarity and for 2 min with a negative polarity (IEC 60335-1/A1)		N/A
19.11.4.4	The power supply terminals of the appliance are subjected to voltage surges in accordance with IEC 61000-4-5, five positive impulses and five negative impulses being applied at the selected points. Test level 3 is applicable for the line-to-line coupling mode, a generator having a source impedance of 2 Ω being used. Test level 4 is applicable for the line-to-earth coupling mode, a generator having a source impedance of 12 Ω being used. (IEC 60335-1/A1)		N/A
	Earthed heating elements in class I appliances are disconnected during this test (IEC 60335-1/A1)		N/A
	For appliances having surge arresters incorporating spark gaps, the test is repeated at a level that is 95 % of the flashover voltage (IEC 60335-1/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3 being applicable. During the test, all frequencies between 0,15 MHz to 80 MHz are covered. (IEC 60335-1/A1)		N/A
19.11.4.6	The appliance is subjected to voltage dips and interruptions in accordance with IEC 61000-4-11. The durations specified in Table 1 of IEC 61000-4-11 are applied to each test level, the dips and interruptions being applied at zero crossing of the supply voltage (IEC 60335-1/A1)		N/A
19.11.4.7	The appliance is subjected to mains signals in accordance with IEC 61000-4-13, test level class 2 being applicable (IEC 60335-1/A1)		N/A
19.12	If the safety of the appliance for any of the fault conditions specified in 19.11.2 depends on the operation of a miniature fuse-link complying with IEC 60127, the test is repeated, measuring the current flowing through the fuse-link; measured current (A); rated current of the fuse-link (A)		N/A
19.13	During the tests the appliance does not emit flames, molten metal, poisonous or ignitable gas in hazardous amounts		N/A
	Temperature rises not exceeding the values shown in table 9	(see appended table)	N/A
	Enclosures not deformed to such an extent that compliance with cl. 8 is impaired		N/A
	If the appliance can still be operated it complies with 20.2		N/A
	The appliance shall not undergo a dangerous malfunction, and there shall be no failure of protective electronic circuits if the appliance is still operable. (IEC 60335-1/A1)		N/A
	Appliances tested with an electronic switch in the off position, or in the stand-by mode, shall not become operational (IEC 60335-1/A1)		N/A
	Insulation, other than of class III appliance, withstand the electric strength test of 16.3, the test voltage specified in table 4:		—
	- basic insulation		N/A
	- supplementary insulation		N/A
	- reinforced insulation		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
19.101	The pump is supplied at rated voltage and operated at approximately half at the maximum total head for 5 min, (IEC 60335-2-41)		N/A
	After which the inlet is removed from the liquid and the operation continued for 7h (IEC 60335-2-41)		N/A
	Pumps are operated again for 5 min at approximately half the maximum total head (IEC 60335-2-41)		N/A
	If the pump becomes inoperable during the test., it is disconnected from the supply and filled with water (IEC 60335-2-41)		N/A
19.102	Pumps marked with a maximum period of operation are supplied at rated voltage and operated under normal operation until steady conditions are established. (IEC 60335-2-41)		N/A

20	STABILITY AND MECHANICAL HAZARDS		---
20.1	Adequate stability	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
	Submersible pumps are not subjected to the test (IEC 60335-2-41)		N/A
	Tilting test through an angle of 10° (appliance placed on an inclined plane/horizontal plane); appliance does not overturn		N/A
	Tilting test repeated on appliances with heating elements, angle of inclination increased to 15°		N/A
	Possible heating test in overturned position; temperature rise does not exceed values shown in table 9		N/A
20.2	Moving parts adequately arranged or enclosed as to provide protection against personal injury		N/A
	Protective enclosures, guards and similar parts are non-detachable		N/A
	Adequate mechanical strength and fixing of protective enclosures		N/A
	Self-resetting thermal cut-outs and overcurrent protective devices not causing a hazard, by unexpected reclosure		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Not possible to touch dangerous moving parts with test probe		N/A

21	MECHANICAL STRENGTH		
	Appliance has adequate mechanical strength and is constructed as to withstand rough handling	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
	Compliance is checked by applying blows to the appliance in accordance with test Ehb of IEC 60068-2-75, the spring hammer test. (IEC 60335-1/A1)		N/A
	The appliance is rigidly supported and three blows, having an impact energy of 0,5 J, are applied to every point of the enclosure that is likely to be weak. (IEC 60335-1/A1)		N/A
	For pumps, other than shower-boost pumps, the impact energy is increased to 1,0 J. No damage after three blows applied to various parts of the enclosure (IEC 60335-2-41)		N/A
	If necessary, repetition of groups of three blows on a new sample		N/A
	If necessary, supplementary or reinforced insulation subjected to the electric strength test of 16.3		N/A
21.2	Accessible parts of solid insulation shall have sufficient strength to prevent penetration by sharp implements. (IEC 60335-1/A1)		N/A
	Compliance is checked by subjecting the insulation to the following test, unless the thickness of supplementary insulation is at least 1 mm and that of reinforced insulation is at least 2 mm. (IEC 60335-1/A1)		N/A
	The insulation is raised to the temperature measured during the test of Clause 11. (IEC 60335-1/A1)		N/A
	The surface of the insulation is then scratched by means of a hardened steel pin, the end of which has the form of a cone with an angle of 40° Its tip is rounded with a radius of 0,25 mm ± 0,02 mm. (IEC 60335-1/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	The pin is held at an angle of 80° - 85° to the horizontal and loaded so that the force exerted along its axis is 10 N ± 0,5 N. (IEC 60335-1/A1)		N/A
	The scratches are made by drawing the pin along the surface of the insulation at a speed of approximately 20 mm/s. Two parallel scratches are made. (IEC 60335-1/A1)		N/A
	They are spaced sufficiently apart so that they are not affected by each other, their length covering approximately 25 % of the length of the insulation. (IEC 60335-1/A1)		N/A
	Two similar scratches are made at 90o to the first pair without crossing them. (IEC 60335-1/A1)		N/A
	The test fingernail of Figure 7 is then applied to the scratched surface with a force of approximately 10 N. No further damage, such as separation of the material, shall occur. The insulation shall then withstand the electric strength test of 16.3. (IEC 60335-1/A1)		N/A
	The hardened steel pin is then applied perpendicularly with a force of 30 N 0,5 N to an unscratched part of the surface. The insulation shall then withstand the electric strength test of 16.3 with the pin still applied and used as one of the electrodes. (IEC 60335-1/A1)		N/A

22	CONSTRUCTION		—
22.1	Appliance marked with the first numeral of the IP system, relevant requirements of IEC 60529 are fulfilled	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
22.2	Stationary appliance: means to provide all-pole disconnection from the supply provided, the following means being available:		--
	- a supply cord fitted with a plug		N/A
	- a switch complying with 24.3		N/A
	- a statement in the instruction sheet that a disconnection incorporated in the fixed wiring is to be provided		N/A
	- an appliance inlet		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Singe-pole switches and single-pole protective devices for the disconnection of heating elements in single-phase permanently connected class I appliances, connected in the phase conductor		N/A
22.3	Appliance provided with pins: no undue strain on socket-outlets		N/A
	Applied torque not exceeding 0.25 Nm		N/A
	Pull force of 50N to each pin after the appliance has being placed in the heating cabinet; when cooled to room temperature the pins are not displaced by more than 1mm		N/A
	Each pin subjected to a tork of 0.4Nm; the pins are not rotating unless rotating does not impair compliance with the standard		N/A
22.4	Appliance for heating liquids and appliance causing undue vibration not provided with pins for insertion into socket-outlets		N/A
22.5	No risk of electric shock when touching the pins of the plug	No capacitor across L/N	N/A
	The appliance is supplied at rated voltage. Any switch is then placed in the off position and the appliance is disconnected from the supply mains at the instant of voltage peak. One second after disconnection, the voltage between the pins of the plug is measured with an instrument that does not appreciably affect the value to be measured. (IEC 60335-1/A1)		N/A
	The voltage shall not exceed 34 V		N/A
22.6	Electrical insulation not affected by condensing water or leaking liquid	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
	Compliance is checked by inspection and for pumps of class II by the test with removal seal of the pump shaft as specified (IEC 60 335-2-41)		N/A
	Electrical insulation of Class II appliances not affected in case of a hose rupture or seal leak		N/A
	Shower-boost pumps having a separate enclosure shall have a drain hole in the enclosure positioned so that the water can drain out without impairing electrical insulation, unless water cannot accumulate within the enclosure in normal use. (IEC 60 335-2-41)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	The hole shall be at least 5 mm in diameter or 20 mm2 in area with a width of least 3 mm. (IEC 60 335-2-41)		N/A
22.7	Adequate safeguards against the risk of excessive pressure in appliances provided with steam-producing devices		N/A
22.8	Electrical connections not subject to pulling during cleaning of compartments to which access can be gained without the aid of a tool, and that are likely to be cleaned in normal use		N/A
22.9	Insulation, internal wiring, windings, commutators and slip rings not exposed to oil, grease or similar substances		N/A
	Adequate insulating properties of oil or grease to which insulation is exposed		N/A
22.10	It shall not be possible to reset voltage-maintained non-self-resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance. (IEC 60335-1/A1)	No voltage-maintained non-self-resetting thermal cut-out	N/A
	NOTE 1 : Voltage-maintained controls will automatically reset if they become deenergized (IEC 60335-1/A1)		N/A
	Non-self-resetting thermal motor protectors shall have a trip-free action unless they are voltage maintained. (IEC 60335-1/A1)		N/A
	NOTE 2: Trip-free is an automatic action that is independent of manipulation or position of the actuating member. (IEC 60335-1/A1)		N/A
	Reset buttons of non-self-resetting controls shall be located or protected so that their accidental resetting is unlikely to occur if this could result in a hazard. (IEC 60335-1/A1)		N/A
	NOTE 3: For example, this requirement precludes the location of reset buttons on the back of an appliance, which could result in them being reset by pushing the appliance against a wall. (IEC 60335-1/A1)		N/A
22.11	Reliable fixing of non-detachable parts that provide the necessary degree of protection against electric shock, moisture or contact with moving parts		N/A
	Obvious locked position of snap-in devices used for fixing such parts		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	No deterioration of the fixing properties of snap-in devices used in parts that are likely to be removed during installation or servicing		N/A
	Tests as described		N/A
22.12	Handles, knobs etc. fixed in a reliable manner		N/A
	Fixing in wrong position of handles, knobs etc. indicating position of switches or similar components not possible		N/A
	Axial force 15 N applied to parts, the shape being so that an axial pull is unlikely to be applied		N/A
	Axial force 30 N applied to parts, the shape being so that an axial pull is likely to be applied		N/A
22.13	Unlikely that handles, when gripped as in normal use, make the operators hand touch parts having a temperature rise exceeding the value specified for handles which are held for short periods only		N/A
22.14	No ragged or sharp edges creating a hazard for the user in normal use, or during user maintenance		N/A
	No exposed pointed ends of self tapping screws etc., liable to be touched by the user in normal use or during user maintenance		N/A
22.15	Storage hooks and the like for flexible cords smooth and well rounded		N/A
22.16	Automatic cord reels cause no undue abrasion or damage to the sheath of the flexible cord, no breakage of conductors strands, no undue wear of contacts		N/A
	Cord reel tested with 6000 operations, as specified		N/A
	Electric strength test of 16.3, voltage of 1000 V applied		N/A
22.17	Spacers not removable from the outside by hand or by means of a screwdriver or a spanner		N/A
22.18	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Current-carrying parts and other metal parts resistant to corrosion under normal conditions of use. Direct contact between opper and aluminium or their alloys is to be avoided (IEC 60 335-2-41)		P
22.19	Driving belts not used as electrical insulation		N/A
22.20	Direct contact between live parts and thermal insulation effectively prevented, unless material used is non-corrosive, non-hygroscopic and non-combustible		N/A
	Compliance is checked by inspection and, if necessary, by appropriate test		N/A
22.21	Wood, cotton, silk, ordinary paper and fibrous or hygroscopic material not used as insulation, unless impregnated		N/A
22.22	Appliances not containing asbestos	No asbestos	P
22.23	Oils containing polychlorinated biphenyl (PCB) not used	No oil	P
22.24	Bare heating elements adequately supported		N/A
	In case of rupture, the heating conductor is unlikely to come in contact with accessible metal parts		N/A
22.25	Sagging heating conductors cannot come into contact with accessible metal parts		N/A
22.26	The insulation between parts operating at safety extra-low voltage and other live parts complies with the requirements for double or reinforced insulation		N/A
22.27	Parts connected by protective impedance separated by double or reinforced insulation		N/A
22.28	Metal parts of Class II appliances conductively connected to gas pipes or in contact with water: separated from live parts by double or reinforced insulation		N/A
22.29	Class II appliances permanently connected to fixed wiring so constructed that the required degree of access to live parts is maintained after installation		N/A
22.30	Parts serving as supplementary or reinforced insulation fixed so that they cannot be removed without being seriously damaged, or		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	so constructed that they cannot be replaced in an incorrect position, and so that if they are omitted, the appliance is rendered inoperable or manifestly incomplete		N/A
22.31	Clearances and creepage distances over supplementary and reinforced insulation not reduced below values specified for supplementary insulation		N/A
	Creepage distances and clearances over supplementary or reinforced insulation not reduced to less than 50% of values specified in 29 if wires, screws etc. becomes loose		N/A
22.32	Supplementary and reinforced insulation designed or protected against deposition of dirt or dust		N/A
	Supplementary insulation of natural or synthetic rubber resistant to ageing, or arranged and dimensioned so that creepage distances are not reduced below values specified in 29.2		N/A
	Ceramic material not tightly sintered, similar material or beads alone not used as supplementary or reinforced insulation		N/A
	Oxygen bomb test at 70 °C for 96 h and 16 h at room temperature		N/A
22.33	Conductive liquids that are or may become accessible in normal use are not in direct contact with live parts	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
	Electrodes not used for heating liquids		N/A
	For class II constructions, conductive liquids that are or may become accessible in normal use, not in direct contact with basic or reinforced insulation		N/A
	For class II constructions, conductive liquids which are in contact with live parts, not in direct contact with reinforced insulation		N/A
22.34	Shafts of operating knobs, handles, levers etc. not live, unless the shaft is not accessible when the part is removed		N/A
22.35	Handles, levers and knobs, held or actuated in normal use, not becoming live in the event of an insulation fault		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Such parts being of metal, and their shafts or fixings are likely to become live in the event of an insulation fault, they are either adequately covered by insulation material, or their accessible parts are separated from their shafts or fixings by supplementary insulation		N/A
	This requirement does not apply to handles, levers and knobs on stationary appliances other than those of electrical components, provided they are either reliably connected to an earthing terminal or earthing contact, or separated from live parts by earthed metal		N/A
22.36	Handles continuously held in the hand in normal use are so constructed that when gripped as in normal use, the operators hand is not likely to touch metal parts, unless they are separated from live parts by double or reinforced insulation		N/A
22.37	Capacitors in Class II appliances not connected to accessible metal parts, unless complying with 22.42		N/A
	Metal casings of capacitors in Class II appliances separated from accessible metal parts by supplementary insulation, unless complying with 22.42		N/A
22.38	Capacitors not connected between the contacts of a thermal cut-out		P
22.39	Lamp holders used only for the connection of lamps		N/A
22.40	Motor-operated appliances and combined appliances intended to be moved while in operation, or having accessible moving parts, fitted with a switch to control the motor. The actuating member of the switch being easily visible and accessible	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
	The requirement is not applicable to submersible pumps and vertical wet pit pumps (IEC 60 335-2-41)		N/A
22.41	No components, other than lamps, containing mercury		P
22.42	Protective impedance consisting of at least two separate components		N/A
	Values specified in 8.1.4 not exceeded if any one of the components are short-circuited or open-circuited		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
22.43	Appliances adjustable for different voltages, accidental changing of the setting of the voltage unlikely to occur		N/A
22.44	Appliances are not allowed to have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children		N/A
22.45	When air is used as reinforced insulation, clearances not reduced below the values specified in 29.1.4 due to deformation as a result of an external force applied to the enclosure		N/A
22.46	Software used in protective electronic circuits shall be software class B or software class C (IEC 60335-1/A1)		N/A
	NOTE 1: Failure of software class B in the presence of another fault in the appliance, or failure of software class C alone, could result in dangerous malfunction, electric shock, fire, mechanical or other hazards. Software class A denotes software used for functional purposes. (IEC 60335-1/A1)		N/A
	Compliance is checked by evaluating the software in accordance with Annex R. (IEC 60335-1/A1)		N/A
	NOTE 2: If the software program is modified, the evaluation and relevant tests are repeated if the modification can influence the results of the test involving protective electronic circuits. (IEC 60335-1/A1)		N/A
22.47	Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use. (IEC 60335-1/A1)		N/A
	Compliance is checked by connecting the appliance to a water supply having a static pressure equal to twice the maximum inlet water pressure or 1,2 MPa, whichever is higher, for a period of 5 min (IEC 60335-1/A1)		N/A
	There shall be no leakage from any part, including any inlet water hose (IEC 60335-1/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
22.48	Appliances intended to be connected to the water mains shall be constructed to prevent backsiphonage of non-potable water into the water mains. (IEC 60335-1/A1)		N/A
	Compliance is checked by the relevant tests of IEC 61770 (IEC 60335-1/A1)		N/A
22.101	Pumps shall withstand the static liquid pressure occuring in normal use as specified: (Submersible pumps and vertical wet pit pumps are not subjected to this test) (IEC 60 335-2-41)		N/A
	The pressure test is carried out for 1 min at a pressure of 1,2 times the pressure occuring at maximum pump total head: ..... m (IEC 60 335-2-41)		N/A
22.102	The material of the pump shall not be affected by the liquid for which the pump is intended if a hazard could result (IEC 60 335-2-41)		N/A
22.103	Submersible pumps and vertical wet pit pumps shall be constructed so that pollution of liquid by lubricants is prevented as far as possible (IEC 60335-2-41)		N/A
22.104	Submersible pumps and vertical wet pit pumps having a mass > 3 Kg shall be constructed so that means for hoisting can be attached (IEC 60 335-2-41)		N/A
22.105	Class I submersible pumps having a plastic enclosure shall be so constructed so that leakage of liquid into the motor does not result in a hazard (IEC 60 335-2-41)		N/A
	After the specified test the accumulating water shall come in contact with earthed metal before it reaches live parts (IEC 60 335-2-41)		N/A
22.106	Shower-boost pumps shall be constructed so that they can be permanently connected to the water supply. (IEC 60 335-2-41/A1)		N/A
	Shower-boost pumps for wall mounting shall be constructed so that they can be securely fixed independently of the connection to the water supply. (IEC 60 335-2-41/A1)		N/A

23	INTERNAL WIRING		—
23.1	Wireways smooth and free from sharp edges		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Wires protected against contact with burrs, cooling fins etc.		N/A
	Wire holes in metal well rounded or provided with bushings		P
	Wiring effectively prevented from coming into contact with moving parts		P
23.2	Beads etc. on live wires cannot change their position, and are not resting on sharp edges or corners		N/A
	Beads inside flexible metal conduits contained within an insulating sleeve		N/A
23.3	Electrical connections and internal conductors movable relatively to each other not exposed to undue stress		N/A
	Flexible metallic tubes not causing damage to insulation of conductors		N/A
	Open-coil springs not used		N/A
	Adequate insulating lining provided inside a coiled spring, the turns of which touch one another		N/A
	No damage after 10 000 flexings for conductors flexed during normal use or 100 flexings for conductors flexed during user maintenance		N/A
	Electric strength test, 1000 V between live parts and accessible metal parts		N/A
23.4	Bare internal wiring sufficiently rigid and fixed		N/A
23.5	The insulation of internal wiring withstanding the electrical stress likely to occur in normal use		P
	No breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
23.6	Sleeving used as supplementary insulation on internal wiring retained in position by positive means		N/A
23.7	The colour combination green/yellow used only for earthing conductors		P
23.8	Aluminium wires not used for internal wiring		P
23.9	No lead-tin soldering of stranded conductors where they are subject to contact pressure, unless		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	clamping means so constructed that there is no risk of bad contact due to cold flow of the solder		N/A
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, shall be at least equivalent to that of light polyvinyl chloride sheathed flexible cord (code designation 60227 IEC 52). (IEC 60335-1/A1)		N/A
	NOTE The mechanical characteristics specified in IEC 60227 are not evaluated (IEC 60335-1/A1)		N/A

24	COMPONENTS		—
24.1	Components comply with safety requirements in relevant IEC standards		P
	List of components	(see appended table)	P
	Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.6		N/A
	Components not tested and found to comply with relevant IEC standard, components not marked or not used in accordance with its marking, tested under the conditions occurring in the appliance		N/A
	Motors are not required to comply with IEC 60034-1. (IEC 60335-1/A1)		P
24.1.1	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, complying with IEC 60384-14, or		N/A
	tested according to annex F		N/A
24.1.2	Safety isolating transformers complying with IEC 61558-2-6, or		N/A
	tested according to annex G		N/A
24.1.3	Switches complying with IEC 61058-1, the number of cycles of operation being at least 10 000, or		N/A
	tested according to annex H		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Level switches are tested for 50 000 cycles of operation (IEC 60 335-2-41)		N/A
24.1.4	Automatic controls complying with IEC 60730-1 with relevant part 2. The number of cycles of operation being:		----
	- thermostats: 10 000		N/A
	- temperature limiters: 1 000		N/A
	- self-resetting thermal cut-outs: 300		P
	- voltage-maintained non-self-resetting thermal cut-outs: 1 000		N/A
	- other non-self-resetting thermal cut-outs: 30		N/A
	- timers: 3 000		N/A
	- energy regulators: 10 000		N/A
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D . (IEC 60335-1/A1)		P
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection provided by enclosures against harmful ingress of water declared for subclause 6.5.2 of IEC 60730-2-8 shall be IPX7 (IEC 60335-1/A1)		N/A
24.1.5	Appliance couplers complying with IEC 60320-1		N/A
	However, appliances classified higher than IPX0, the appliance couplers complying with IEC 60320-2-3		N/A
	The relevant standard for interconnection couplers is IEC 60320-2-2. (IEC 60335-1/A1)		N/A
24.1.6	Small lamp holders similar to E10 lampholders complying with IEC 60238, the requirements for E10 lampholders being applicable		N/A
24.2	No switches or automatic controls in flexible cords	No flexible cord	N/A
	No devices causing the protective device in the fixed wiring to operate in the event of a fault in the appliance		P
	No thermal cut-outs that can be reset by soldering		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Level switches may be incorporated in interconnection cords (IEC 60335-2-41)		N/A
24.3	Switches intended for all-pole disconnection of stationary appliances are directly connected to the supply terminals and having a contact separation in all poles, providing full disconnection under overvoltage category III conditions		N/A
24.4	Plugs and socket-outlets for extra-low voltage circuits and heating elements, not interchangeable with plugs and socket-outlets listed in IEC 60083 or IEC 60906-1 or with connectors and appliance inlets complying with the standard sheets of IEC 60320-1		N/A
24.5	Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		P
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load	Working voltage of capacitor when appliance supplied at 253V: 413V; 1,1 times rated voltage of capacitor: 495V	P
24.6	Working voltage of motors connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance, not exceeding 42V.		N/A
	In addition, the motors are complying with the requirements of Annex I		N/A
24.7	Hose-sets for the connection of appliances to the water mains shall comply with IEC 61770. They shall be supplied with the appliance. (IEC 60335-1/A1)		N/A

25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		---
25.1	Submersible pumps, other than class III, shall be provided with a supply cord fitted with a plug (IEC 60335-2-41)	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
25.2	Appliance not provided with more than one means of connection to the supply mains		N/A
	Stationary appliance for multiple supply may be provided with more than one means of connection, provided electric strength test of 1250 V for 1 min between each means of connection causes no breakdown		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
25.3	Submersible pumps, other than class III, shall be provided with a flexible cord (IEC 60335-2-41)		N/A
25.4	Cable and conduit entries, rated current of appliance not exceeding 16 A, dimensions according to table 10		N/A
	Introduction of conduit or cable does not reduce clearances or creepage distances below values specified in 29		N/A
25.5	Method for assemble supply cord with the appliance:		—
	- type X attachment is not allowed for submersible pumps (IEC 60335-2-41)		N/A
	- type Y attachment		N/A
	- type Z attachment, allowed for pumps having a rated power input not exceeding 100W and for pumps for garden ponds (IEC 60335-2-41)		N/A
	Type X attachment, other than those with a specially prepared cord, not used for flat twin tinsel cords		N/A
25.6	Plugs fitted with only one flexible cord	No plug and supply cord provided	N/A
25.7	Supply cord not lighter than:		—
	- 60245 IEC 66 (for pumps intended for outdoor use having a rated input > 1000 W and portable pumps having a mass > 5 Kg) (IEC 60 335-2-41)		N/A
	- 60245 IEC 66 (for pumps intended for use in swimming pools other than class III pumps) (IEC 60 335-2-41)		N/A
	- 60227 IEC 57 (for fixed pumps having a rated input < 1000 W and portable pumps for outdoor use having a mass < 5 Kg) (IEC 60 335-2-41)		N/A
	- 60245 IEC 57 (for pumps for indoor use, except table fountain pumps and aquarium pumps , shower-boost pumps and class III pumps (IEC 60 335-2-41/A1)		N/A
	Temperature rise of external metal parts exceeding 75 K, PVC cord not used, unless		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	appliance so constructed that the supply cord is not likely to touch external metal parts in normal use, or		N/A
	the supply cord is appropriate for higher temperatures, type Y or type Z attachment used		N/A
25.8	Nominal cross-sectional area of supply cords according to table 11; rated current (A); cross-sectional area (mm²).....		N/A
	The supply cord of submersible pumps other than class III pumps intended for outdoor use shall have a length of at least 10 m (IEC 60 335-2-41)		N/A
25.9	Supply cord not in contact with sharp points or edges		N/A
25.10	Green/yellow core for earthing purposes in Class I appliance		N/A
25.11	Conductors of supply cords not consolidated by lead-tin soldering where they are subject to contact pressure, unless		N/A
	clamping means so constructed that there is no risk of bad contacts due to cold flow of the solder		N/A
25.12	Moulding the cord to part of the enclosure does not damage the insulation of the supply cord		N/A
25.13	Inlet opening so shaped as to prevent damage to the supply cord		N/A
	Unless the enclosure at the inlet opening is of insulation material, a non-detachable lining or bushing complying with 29.3 for supplementary insulation provided		N/A
	If unsheathed supply cord, a similar additional bushing or lining is required, unless		N/A
	the appliance is class 0		N/A
25.14	Supply cords adequately protected against excessive flexing		N/A
	Portable pumps, except table fountain pumps and aquarium pumps, are subjected to the test (EN 60335-2-41/A1)		N/A
	Flexing test:		—
	- applied force (N)		N/A
	- number of flexings		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	The test does not result in:		—
	- short circuit between the conductors		N/A
	- breakage of more than 10% of the strands of any conductor		N/A
	- separation of the conductor from its terminal		N/A
	- loosening of any cord guard		N/A
	- damage, within the meaning of the standard, to the cord or the cord guard		N/A
	- broken strands piercing the insulation and becoming accessible		N/A
25.15	Conductors of the supply cord relieved from strain, twisting and abrasion by use of cord anchorage		N/A
	The cord cannot be pushed into the appliance to such an extent that the cord or internal parts of the appliance can be damaged		N/A
	Pull and torque test of supply cord, values shown in table 10: pull (N); torque (not on automatic cord reel) (Nm).....		N/A
	Max. 2 mm displacement of the cord		N/A
	Creepage distances and clearances not reduced below values specified in 29.1		N/A
25.16	Cord anchorages for type X attachments constructed and located so that:		—
	- replacement of the cord is easily possible		N/A
	- it is clear how the relief from strain and the prevention of twisting are obtained		N/A
	- they are suitable for different types of cord		N/A
	- cord cannot touch the clamping screws of cord anchorage if these screws are accessible, unless separated from accessible metal parts by supplementary insulation		N/A
	- the cord is not clamped by a metal screw which bears directly on the cord		N/A
	- at least one part of the cord anchorage securely fixed to the appliance, unless part of a specially prepared cord		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	- screws which have to be operated when replacing the cord do not fix any other component, if applicable		N/A
	- if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		N/A
	- for Class 0, 0I and I appliances: they are of insulating material or are provided with an insulating lining, unless a failure of the insulation of the cord does not make accessible metal parts live		N/A
	- for Class II appliances: they are of insulating material, or if of metal, they are insulated from accessible metal parts by supplementary insulation		N/A
	- conductors not moved more than 1 mm in the terminals		N/A
25.17	Adequate cord anchorages for type Y and Z attachment		N/A
25.18	Cord anchorages only accessible with the aid of a tool, or		N/A
	so constructed that the cord can only be fitted with the aid of a tool		N/A
25.19	Type X attachment, glands not used as cord anchorage in portable appliances		N/A
	Tying the cord into a knot or tying the cord with string not used		N/A
25.20	Conductors of the supply cord for type Y and Z attachment adequately additionally insulated		N/A
25.21	Space for supply cord for type X attachment or for connection of fixed wiring constructed to permit checking of conductors with respect to correct positioning and connection before fitting any cover, no risk of damage to the conductors when fitting the cover, no contact with accessible metal parts if a conductor becomes loose, etc.		N/A
	For portable appliances, the uninsulated end of a conductor prevented from any contact with accessible metal parts, unless the end of the cord is such that the conductors are unlikely to slip free		N/A
25.22	Appliance inlet:		—

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	- live parts not accessible during insertion or removal		N/A
	- connector can be inserted without difficulty		N/A
	- the appliance is not supported by the connector		N/A
	- is not for cold conditions if temp. Rise of external metal parts exceeds 75 K, unless the supply cord is not likely to touch such metal parts		N/A
25.23	Interconnection cords comply with the requirements for the supply cord, except as specified		N/A
	If necessary, electric strength test of 16.3		N/A
25.24	Interconnection cords not detachable without the aid of a tool if compliance with the standard is impaired when they are disconnected		N/A
25.25	Dimensions of pins compatible with the dimensions of the relevant socket-outlet. Dimensions of pins and engagement face in accordance with the relevant plug in IEC 60083		N/A

26	TERMINALS FOR EXTERNAL CONDUCTORS		---
26.1	Appliances provided with terminals or equally effective devices for connection of external conductors	Tested as a component. Relative requirements shall be evaluated in the end products	N/A
	However, earthing terminals may be accessible if a tool is required to make the connections and means are provided to clamp the wire independently from its connection. (IEC 60335-1/A1)		N/A
	Terminals only accessible after removal of a non-detachable cover		N/A
26.2	Appliances with type X attachment and appliances for connection to fixed wiring provided with terminals in which connections are made by means of screws, nuts or similar devices, unless the connections are soldered		N/A
	Screws and nuts serve only to clamp supply conductors, except		N/A
	internal conductors, if so arranged that they are unlikely to be displaced when fitting the supply conductors		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	If soldered connections used, the conductor so positioned or fixed that reliance is not placed on soldering alone		N/A
	Soldering alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free at the soldered joint		N/A
26.3	Terminals for type X attachment and for connection to fixed wiring so constructed that the conductor is clamped between metal surfaces with sufficient contact pressure and without damaging the conductor		N/A
	Terminals for type X attachment and those for connection to fixed wiring so fixed that when tightening or loosening the clamping means:		---
	- the terminal does not loosen		N/A
	- internal wiring is not subjected to stress		N/A
	- clearances and creepage distances are not reduced below the values in 29		N/A
	Compliance checked by inspection and by the test of subclause 8.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm)		N/A
26.4	Terminals for type X attachment, except those with a specially prepared cord, and those for connection to fixed wiring, no special preparation of conductors required, and so constructed or placed that conductors prevented from slipping out		N/A
26.5	Terminals for type X attachment so located or shielded that if a wire of a stranded conductor escapes, no risk of accidental connection to other parts that result in a hazard		N/A
	Stranded conductor test, 8 mm insulation removed		N/A
	No contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
26.6	Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm^2)		N/A
	Terminals only suitable for a specially prepared cord		N/A
26.7	Terminals for type X attachment accessible after removal of a cover or part of the enclosure		N/A
26.8	Terminals for the connection to fixed wiring, including the earthing terminal, located close to each other		N/A
26.9	Terminals of the pillar type constructed and located as specified		N/A
26.10	Terminals with screw clamping and screwless terminals not used for flat twin tinsel cords, unless conductors ends fitted with a device suitable for screw terminals		N/A
	Pull test of 5 N to the connection		N/A
26.11	For type Y and Z attachment: soldered, welded, crimped and similar connections may be used		N/A
	For Class II appliances: the conductor so positioned or fixed that reliance is not placed on soldering, welding or crimping alone		N/A
	For Class II appliances: soldering, welding or crimping alone used, barriers provided, clearances and creepage distances satisfactory if the conductor becomes free		N/A

27	PROVISION FOR EARTHING		—
27.1	Accessible metal parts of Class 0I and I appliances, permanently and reliably connected to an earthing terminal or contact of the appliance inlet	Tested as a component. Only continuity was evaluated. Other accessible metal parts and grounding construction shall be evaluated in the end products	P
	Earthing terminals not connected to neutral terminal		N/A
	Class 0, II and III appliance have no provision for earthing		N/A
	Safety extra-low voltage circuits not earthed, unless protective extra-low voltage circuits		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
27.2	Clamping means adequately secured against accidental loosening		N/A
	Terminals used for the connection of external equipotential bonding conductors allow connection of conductors of 2.5 to 6 mm², and		N/A
	do not provide earthing continuity between different parts of the appliance		N/A
	Conductors cannot be loosened without the aid of a tool		N/A
27.3	For appliances with supply cord, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord anchorage		N/A
	If a detachable part having an earth connection is plugged into another part of the appliance, the earth connection shall be made before the current-carrying connections are established. The current-carrying connections shall be separated before the earth connection when removing the part. (IEC 60335-1/A1)		N/A
27.4	No risk of corrosion resulting from contact between metal of earthing terminal and other metal		N/A
	Adequate resistance to corrosion of coated or uncoated parts providing earthing continuity, other than parts of a metal frame or enclosure		N/A
	Parts of steel providing earthing continuity provided at the essential areas with an electroplated coating, thickness at least 5 µm		N/A
	Adequate protection against rusting of parts of coated or uncoated steel, only intended to provide or transmit contact pressure		N/A
	In case of aluminium alloys precautions taken to avoid risk of corrosion		N/A
27.5	Low resistance of connection between earthing terminal and earthed metal parts		P
	This requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit, provided that clearances of basic insulation are based on the rated voltage of the appliance		N/A
	Resistance not exceeding 0,1 Ω at the specified low-resistance test	0,01 Ω	P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
27.6	The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances		N/A
	They may be used in other appliances if:		—
	- at least two tracks are used with independent soldering points and the appliance complies with requirements of 27.5 for each circuit		N/A
	- the material of the printed circuit board complies with IEC 60249-2-4 or IEC 60249-2-5		N/A
28	SCREWS AND CONNECTIONS		—
28.1	Fixings, electrical connections and connections providing earthing continuity withstand mechanical stresses		P
	Screws not of soft metal liable to creep, such as zinc or aluminium		P
	Diameter of screws of insulating material min. 3 mm	No screw of insulating material	N/A
	Screws of insulating material not used for any electrical connection or connections providing earthing continuity		N/A
	Screws used for electrical connections or connections providing earthing continuity screw into metal		P
	Screws not of insulating material if their replacement by a metal screw can impair supplementary or reinforced insulation		P
	Type X attachment, screws to be removed for replacement of supply cord or for user maintenance, not of insulating material if their replacement by a metal screw can impair basic insulation		N/A
	For screws and nuts; test as specified	(see appended table)	P
28.2	Electrical connections and connections providing earthing continuity constructed so that contact pressure not transmitted through insulating material liable to shrink or distort, unless shrinkage or distortion compensated		P
	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5A		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
28.3	Space-threaded (sheet metal) screws only used for electrical connections if they clamp the parts together		N/A
	Thread-cutting (self-tapping) screws only used for electrical connections if they generate a full form standard machine screw thread		N/A
	Such screws not used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action		N/A
	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity, provided unnecessary to disturb the connection and at least two screws are used for each connection		N/A
28.4	Screws and nuts that make mechanical connection secured against loosening if they also make electrical connections or connections providing earthing continuity		N/A
	Rivets for electrical connections or connections providing earthing continuity secured against loosening if subjected to torsion		N/A

29	CLEARANCES, CREEPAGE DISTANCES AND SOLID INSULATION		—
	Clearances, creepage distances and solid insulation withstand electrical stress		P
	If coatings are used on printed circuit boards to protect the microenvironment (Type A coating) or to provide basic insulation (Type B coating), Annex J applies. The microenvironment is pollution degree 1 under Type A coating. There are no creepage distance or clearance requirements under Type B coating. (IEC 60335-1/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
29.1	Clearances shall not be less than the values specified in Table 16, taking into account the rated impulse voltage for the overvoltage categories of Table 15, unless, for basic insulation and functional insulation, they comply with the impulse voltage test of Clause 14.However, if the construction is such that the distances could be affected by wear, by distortion, by movement of the parts or during assembly, the clearances for rated impulse voltages of 1 500 V and above are increased by 0,5 mm and the impulse voltage test is not applicable. (IEC 60335-1/A1)		N/A
	The impulse voltage test is not applicable when the microenvironment is pollution degree 3 or for basic insulation of class 0 appliances and class 0I appliances. (IEC 60335-1/A1)		N/A
	Appliances are in overvoltage category II		P
	Compliance is checked by inspection and measurements as specified		P
29.1.1	Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage		P
	Clearance at the terminals of tubular sheathed heating elements may be reduced to 1mm if the microenvironment is pollution degree 1		N/A
	Lacquered conductors of windings are considered to be bare conductors. (IEC 60335-1/A1)		P
29.1.2	Clearances of supplementary insulation not less than those specified for basic insulation in table 16	Tested as a component. Requirements for supplementary and reinforced insulation shall be evaluated in the end products	N/A
29.1.3	Clearances of reinforced insulation not less than those specified for basic insulation in table 16, but using the next higher step for rated impulse voltage		N/A
29.1.4	For functional insulation, the values of table 16 are applicable, unless		P
	the appliance complies with clause 19 with the functional insulation short-circuited		N/A
	Clearances at crossover points of lacquered conductors not measured		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Clearance between surfaces of PTC heating elements may be reduced to 1mm		N/A
	Lacquered conductors of windings are considered to be bare conductors. However, clearances at crossover points are not measured. (IEC 60335-1/A1)		P
29.1.5	Appliances having higher working voltage than rated voltage, the voltage used for determining clearances from table 16 is the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		N/A
	If the secondary winding of a step-down transformer is earthed, or if there is an earthed screen between the primary and secondary windings, clearances of basic insulation on the secondary side not less than those specified in table 16, but using the next lower step for rated impulse voltage		N/A
	Circuits supplied with a voltage lower than rated voltage, clearances of functional insulation based on the working voltage used as the rated voltage in table 15		N/A
29.2	Creepage distances not less than those appropriate for the working voltage, taking into account the material group and the pollution degree		P
	Pollution degree 2 applies, unless		P
	precautions taken to protect the insulation; pollution degree 1		N/A
	insulation subjected to conductive pollution; pollution degree 3		N/A
	Compliance is checked by inspection and measurements as specified		P
29.2.1	Creepage distances of basic insulation not less than specified in table 17		P
	For pollution degree 1, creepage distance not less than the minimum specified for the clearance in table 16, if the clearance has been checked according to the test of clause 14		N/A
29.2.2	Creepage distances of supplementary insulation at least as specified for basic insulation in table 17	Tested as a component. Requirements for supplementary and reinforced insulation shall be evaluated in the end products	N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
29.2.3	Creepage distances of reinforced insulation at least double as specified for basic insulation in table 17		N/A
29.2.4	Creepage distances of functional insulation not less than specified in table 18		P
	Creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		N/A
29.3	Supplementary insulation and reinforced insulation shall have adequate thickness, or have a sufficient number of layers, to withstand the electrical stresses that can be expected during the use of the appliance. (IEC 60335-1/A1)		N/A
29.3.1	The thickness of the insulation shall be at least (IEC 60335-1/A1)		—
	- 1 mm for supplementary insulation; (IEC 60335-1/A1)		N/A
	- 2 mm for reinforced insulation. (IEC 60335-1/A1)		N/A
29.3.2	Each layer of material shall withstand the electric strength test of 16.3 for supplementary insulation. Supplementary insulation shall consist of at least 2 layers of material and reinforced insulation of at least 3 layers. (IEC 60335-1/A1)		N/A
29.3.3	The insulation is subjected to the dry heat test Bb of IEC 60068-2-2 for 48 h at a temperature of 50 K in excess of the maximum temperature rise measured during the test of Clause 19. At the end of the period, the insulation is subjected to the electric strength test of 16.3 at the conditioning temperature and also after it has cooled down to room temperature. (IEC 60335-1/A1)		N/A

30	RESISTANCE TO HEAT AND FIRE		—
30.1	External parts of non-metallic material,	Tested as a component. Relative parts shall be evaluated in the end products	N/A
	parts supporting live parts, and		P
	thermoplastic material providing supplementary or reinforced insulation,	Ditto	N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts: at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)	(see appended table)	P
	Parts supporting live parts: at 40°C plus the maximum temperature rise determined during the test of clause 11, or at 125°C, whichever is the higher; temperature (°C)	(see appended table)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation, 25°C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)		N/A
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		P
30.2.1	Glow-wire test of IEC 60695-2-11 at 550 °C, unless	Cover	P
	the material is classified at least HB40 according to IEC 60695-11-10		N/A
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material		N/A
30.2.3	Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2		P
	Test not applicable to conditions as specified		N/A
30.2.3.1	Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and	Connectors	P
	parts of insulating material within a distance of 3mm,		P
	having a glow-wire flammability index of at least 850°C according to IEC 60695-2-12		P
30.2.3.2	Parts of insulating material supporting current-carrying connections, and		P
	parts of insulating material within a distance of 3mm,		P
	subjected to glow-wire test of IEC 60695-2-11		P
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 as specified		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Glow-wire test of IEC 60695-2-11, the temperature being:		—
	- 750°C, for connections carrying a current exceeding 0,2A during normal operation		P
	- 650°C, for other connections		N/A
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified	Tested as a component. Relative parts shall be evaluated in the end products	N/A
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless		N/A
	the material is classified as V-0 or V-1 according to IEC 60695-11-10		N/A
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E		N/A
	Test not applicable to conditions as specified		N/A

31	RESISTANCE TO RUSTING		—
	Relevant ferrous parts adequately protected against rusting		P

32	RADIATION, TOXICITY AND SIMILAR HAZARDS		—
	Appliance does not emit harmful radiation		P
	Appliance does not present a toxic or similar hazard		P

A	ANNEX A (INFORMATIVE) ROUTINE TESTS		—
	Description of routine tests to be carried out by the manufacturer		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		—
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance		N/A
	This annex does not apply to battery chargers		N/A
3.1.9	Appliance operated under the following conditions:		—
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		N/A
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		N/A
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		N/A
	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		N/A
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		N/A
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		N/A
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals		N/A
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information		N/A
	Details about how to remove batteries containing materials hazardous to the environment given		N/A
7.15	Markings placed on the part of the appliance connected to the supply mains		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment		N/A
	If the appliance can be operated without batteries, double or reinforced insulation required		N/A
11.7	The battery is charged for the period described		N/A
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		N/A
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		N/A
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		N/A
19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		N/A
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IEC 68-2-32		N/A
	Part of the appliance incorporating the pins subjected to the free fall test, procedure 2, of IEC 60068-2-32, the number of falls being:		—
	- 100, the mass of part does not exceed 250 g		N/A
	- 50, the mass of part exceeds 250 g		N/A
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 are met		N/A
22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		N/A
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		N/A
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		N/A
	For other parts, 30.2.2 applies		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
C	ANNEX C (NORMATIVE) AGEING TEST ON MOTORS		—
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		N/A
D	ANNEX D (NORMATIVE) THERMAL MOTOR PROTECTORS		—
	Applicable to appliances having motors that incorporate thermal motor protectors		P
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST		—
	Needle-flame test carried out in accordance with IEC 60695-2-2, with the following modifications:		N/A
5	Severities		———
	The duration of application of the test flame is 30 s ± 1 s		N/A
8	Test procedure		———
8.2	The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N/A
8.4	The first paragraph does not apply		N/A
	If possible, the flame is applied at least 10 mm from a corner		N/A
8.5	The test is carried out on one specimen		N/A
	If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N/A
10	Evaluation of test results		———
	The duration of burning not exceeding 30 s		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	However, for printed circuit boards, the duration of burning not exceeding 15 s		N/A

F	ANNEX F (NORMATIVE) CAPACITORS		—
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		N/A
1.5	Terminology		——
1.5.3	Class X capacitors tested according to subclass X2		N/A
1.5.4	This subclause is applicable		N/A
1.6	Marking		——
	Items a) and b) are applicable		N/A
3.4	Approval testing		——
3.4.3.2	Table II is applicable as described		N/A
4.1	Visual examination and check of dimensions		——
	This subclause is applicable		N/A
4.2	Electrical tests		——
4.2.1	This subclause is applicable		N/A
4.2.5	This subclause is applicable		N/A
4.2.5.2	Only table IX is applicable		N/A
	Values for test A apply		N/A
	However, for capacitors in heating appliances the values for test B or C apply		N/A
4.12	Damp heat, steady state		——
	This subclause is applicable		N/A
	Only insulation resistance and voltage proof are checked		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
4.13	Impulse voltage		—
	This subclause is applicable		N/A
4.14	Endurance		—
	Subclauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		N/A
4.14.7	Only insulation resistance and voltage proof are checked		N/A
	Visual examination, no visible damage		N/A
4.17	Passive flammability test		—
	This subclause is applicable		N/A
4.18	Active flammability test		—
	This subclause is applicable		N/A

G	ANNEX G (NORMATIVE) SAFETY ISOLATING TRANSFORMERS		—
	The following modifications to this standard are applicable for safety isolating transformers:		N/A
7	Marking and instructions		—
7.1	Transformers for specific use marked with:		—
	-name, trademark or identification mark of the manufacturer or responsible vendor		N/A
	-model or type reference		N/A
17	Overload protection of transformers and associated circuits		—
	Fail-safe transformers comply with subclause 15.5 of IEC 61558-1		N/A
22	Construction		—
	Subclauses 19.1 and 19.1.2 of IEC 61558-2-6 are applicable		N/A
29	Clearances, creepage distances and solid insulation		—

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
29.1, 29.2 and 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IEC 61558-1 apply		N/A

H	ANNEX H (NORMATIVE) SWITCHES		—
	Switches comply with the following clauses of IEC 61058-1, as modified:		——
	-The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		N/A
	-Before being tested, switches are operated 20 times without load		N/A
8	Marking and documentation		——
	Switches are not required to be marked		N/A
	However, switches that can be tested separately from the appliance marked with the manufacturer's name or trade mark and the type reference		N/A
13	Mechanism		——
	The tests may be carried out on a separate sample		N/A
15	Insulation resistance and dielectric strength		——
15.1	Not applicable		N/A
15.2	Not applicable		N/A
15.3	Applicable for full disconnection and micro-disconnection		N/A
17	Endurance		——
	Compliance is checked on three separate appliances or switches		N/A
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of IEC 60335		N/A
	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load, are not subjected to the tests		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Subclauses 17.2.2 and 17.2.5.2 not applicable (IEC 60335-1:2001/A1)		N/A
	The ambient temperature during the test is that occurring in the appliance during the test of Clause 11 in IEC 60335-1 (IEC 60335-1:2001/A1)		N/A
	Temperature rise of the terminals not more than 30 K above the temperature rise measured in clause 11 of IEC 60335-1		N/A
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		——
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		N/A

I	ANNEX I (NORMATIVE) MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		—
	The following modifications to this standard are applicable for motors having basic insulation that is inadequate for the rated voltage of the appliance:		N/A
8	Protection against access to live parts		——
8.1	Metal parts of the motor are considered to be bare live parts		N/A
11	Heating		——
11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		N/A
11.8	Temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		N/A
16	Leakage current and electric strength		——
16.3	Insulation between live parts of the motor and its other metal parts not subjected to the test		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
19	Abnormal operation		——
19.1	The tests of 19.7 to 19.9 not carried out		N/A
19.101	Appliance operated at rated voltage with each of the following fault conditions:		——
	- short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		N/A
	- short circuit of each diode of the rectifier		N/A
	- open circuit of the supply to the motor		N/A
	- open circuit of any parallel resistor, the motor being in operation		N/A
	Only one fault simulated at a time, the tests carried out consecutively		N/A
22	Construction		——
22.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		N/A
	Compliance checked by the tests specified for double and reinforced insulation		N/A

J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS		—
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A
6.6	Climatic sequence		——
	When production samples are used, three samples of the printed circuit board are tested		N/A
6.6.1	Cold		——
	The test is carried out at -25°C		N/A
6.6.3	Rapid change of temperature		——
	Severity 1 is specified		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
6.8.6	Partial discharge extinction voltage		——
	Type A coatings not subjected to a partial discharge test		N/A
6.9	Additional tests		——
	This subclause is not applicable		N/A

K	ANNEX K (NORMATIVE) OVERVOLTAGE CATEGORIES		—
	The information on overvoltage categories is extracted from IEC 60664-1		P
	Overvoltage category is a numeral defining a transient overvoltage condition		P
	Equipment of overvoltage category IV is for use at the origin of the installation		N/A
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		N/A
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		P
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		N/A
	Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriate low level		N/A

L	ANNEX L (INFORMATIVE) GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		—
	Sequences for the determination of clearances and creepage distances		P

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
M	ANNEX M (NORMATIVE) POLLUTION DEGREE		—
	The information on pollution degrees is extracted from IEC 60664-1		P
	Pollution		—
	The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		P
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		P
	Minimum clearances specified where pollution may be present in the microenvironment		P
	Degrees of pollution in the microenvironment		—
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		—
	- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		N/A
	- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		P
	- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		N/A
	- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		N/A
N	ANNEX N (NORMATIVE) PROOF TRACKING TEST		—
	The proof tracking test is carried out in accordance with IEC 60112 with the following modifications:		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
7	Test apparatus		—
7.3	Test solutions		—
	Test solution A is used (IEC 60335-1:2001/A1)		N/A
10	Determination of proof tracking index (PTI) (IEC 60335-1:2001/A1)		—
10.1	Procedure (IEC 60335-1:2001/A1)		—
	The proof voltage is 100V, 175V, 400V or 600V.. (IEC 60335-1:2001/A1)		N/A
	The last paragraph of Clause 3 applies (IEC 60335-1:2001/A1)		N/A
	The test is carried out on five specimens (IEC 60335-1:2001/A1)		N/A
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100 (IEC 60335-1:2001/A1)		N/A
10.2	Report		—
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V (IEC 60335-1:2001/A1)		N/A

O	ANNEX O (INFORMATIVE) SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		—
	Description of tests for determination of resistance to heat and fire		P

P	ANNEX P (INFORMATIVE) GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES (IEC 60335-1:2001/A1)		—
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE (IEC 60335-1:2001/A1)		——

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WdaE, if liable to be connected to a supply mains that excludes the protective earthing conductor (IEC 60335-1:2001/A1)		------
5	General conditions for the tests (IEC 60335-1:2001/A1)		—
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 $^{+3}/_{0}$ (IEC 60335-1:2001/A1)		N/A
7	Marking and instructions (IEC 60335-1:2001/A1)		—
7.1	The appliance marked with the letters WDaE (IEC 60335-1:2001/A1)		N/A
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA (IEC 60335-1:2001/A1)		N/A
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries (IEC 60335-1:2001/A1)		N/A
11	Heating (IEC 60335-1:2001/A1)		—
11.8	The values of Table 3 are reduced by 15 K (IEC 60335-1:2001/A1)		N/A
13	Leakage current and electric strength at operating temperature (IEC 60335-1:2001/A1)		—
13.2	The leakage current for class I appliances not exceeding 0,5 mA (IEC 60335-1:2001/A1)		N/A
15	Moisture resistance (IEC 60335-1:2001/A1)		—
15.3	The value of t is 37 °C (IEC 60335-1:2001/A1)		N/A
16	Leakage current and electric strength (IEC 60335-1:2001/A1)		—
16.2	The leakage current for class I appliances not exceeding 0,5 mA (IEC 60335-1:2001/A1)		N/A
19	Abnormal operation (IEC 60335-1:2001/A1)		—

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3 (IEC 60335-1:2001/A1)		N/A

Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS	—
	Description of tests for appliances incorporating electronic circuits (IEC 60335-1:2001/A1)	—

R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION (IEC 60335-1:2001/A1)		—
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified (IEC 60335-1:2001/A1)		—
H.2	Definitions (IEC 60335-1:2001/A1)		—
	Only definitions H.2.16 to H.2.20 applicable (IEC 60335-1:2001/A1)		N/A
H.7	Information (IEC 60335-1:2001/A1)		—
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable (IEC 60335-1:2001/A1)		N/A
H.11.12	Controls using software (IEC 60335-1:2001/A1)		—
	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable (IEC 60335-1:2001/A1)		N/A
H.11.12.7	Delete text (IEC 60335-1:2001/A1)		N/A
H.11.12.7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data (IEC 60335-1:2001/A1)		N/A
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired (IEC 60335-1:2001/A1)		N/A
H.11.12.8.1	Replace text (IEC 60335-1:2001/A1)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
H.11.12.13	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired (IEC 60335-1:2001/A1)		N/A

APPENDIX 1:
To complete the assessment according to EN 60335-1 / EN 60335-2-41 the following requirements are considered as well :
GROUP DIFFERENCES to IEC 60335-1, 4th ed (CB Bulletin 107B)

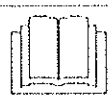
6.1	Protection against electric shock: Class 0, 0I (IEC 60335-1), I, II, III	Class I	P
7.1	Rated voltage or voltage range shall cover -230 V for single-phase appliances -400 V for multi-phase appliances	230V	P
25.6	Supply cords of single-phase portable appliances having a rated current not exceeding 16 A shall be provided with a plug complying with the following standard sheets of IEC 60083 : 1975:		—
25.6	-for Class I appliances (standard sheet C2b, C3b or C4)	...	N/A
25.6	-for Class II appliances (standard sheet C5 or C6)	...	N/A
25.7	Add -ordinary polychloroprene sheathed flexible cord (code designation 60245 IEC 57) (H05RN-F)		N/A
	When supply cords having high flexibility are used, they shall not be lighter than :		—
	- rubber insulated and sheathed cord (code designation 60245 IEC 86) (H03RR-H);		N/A
	- rubber insulated, cross linked PVC sheathed cord (code designation 60245 IEC 87) (H03RV4-H);		N/A
	- cross linked PVC insulated and sheathed cord (code designation 60245 IEC 88) (H03V4V4-H).		N/A
	NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
ANNEX ZC (normative)	Normative references to international publications with their corresponding European publications		P
ANNEX ZD (informative)	IEC and CENELEC code designations for flexible cords		N/A
ZA	ANNEX ZA, SPECIAL NATIONAL CONDITIONS (EN 60335-1:2002)		——
7.12	DENMARK: requirements regarding marking tag of power supply cord and connecting of earthing wire		N/A
19.5	NORWAY: the test is also applicable to appliances intended to be permanently connected to fixed wiring		N/A
22.2	FRANCE, NORWAY: The second paragraph of this subclause dealing with single-phase Class I permanently connected appliances with heating elements is not applicable due to the supply system		N/A
25.6	BELGIUM, FRANCE, SPAIN , UNITED KINGDOM: plugs according to Standard Sheet C2b not allowed		N/A
	AUSTRIA, FINLAND, GERMANY, ICELAND, IRELAND, ITALY, LUXEMBOURG, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN, SWITZERLAND, UNITED KINGDOM: plugs according to Standard C3b not allowed		N/A
	DENMARK: Supply cords of single-phase portable appliances having a rated current not exceeding 13 A provided with a plug according to the following:		——
	- Class I appliances: Section 107-2-D1 Standard Sheet DK2-1a		N/A
	For appliances covered by a Part 2 of EN 60 335, also plugs in accordance with Section 107-2-D1 Standard Sheet C2b, C3b or C4 are allowed		N/A
	- Class II appliances: Section 107-2-D1, Standard Sheet C1b ,C5, C6, DKA2-1a and DKA2-1b		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	Stationary single-phase appliances, having a rated current not exceeding 13 A, and provided with a plug, the plug is in accordance with the requirements above		N/A
	Multi-phase appliances and single-phase appliances having a rated current exceeding 13 A, and provided with a plug, the plug is in accordance with the requirements below:		----
	- Class I appliances: Section 107-2-D1, Standard Sheet DK6-1a/EN 60 309-2, Standard Sheet 2-II, 2-IV		N/A
	- Class II appliances: Section 107-2-D1, Standard Sheet DK6-1a*/2-II, 2-IV*		N/A
	For max. allowed current values see EN 60335-1		N/A
	IRELAND: plug is in accordance with Standard Sheets B2 and C2b (see annex ZB as well)		N/A
	ITALY: Only plugs listed in CENELEC Report ROBT-005:2001 are allowed		N/A
	SPAIN: For household appliances the following plugs only are allowed:		----
	- UNE 20315:ESC 10-1b, C2b, C4, C6, or ESB 25-5b;		N/A
	- UNE-EN 50075		N/A
	SWITZERLAND: supply cords of portable household and similar electrical appliances, rated current not exceeding 10 A, provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:		----
	SEV 6532-2:1991 plug type 15 3P+N+PE 250/400 V, 10 A		N/A
	SEV 6533-2:1991 plug type 11 L+N 250 V, 10 A		N/A
	SEV 6534-2:1991 plug type 12 L+N+PE 250 V, 10 A		N/A
	UNITED KINGDOM: plug according to Standard Sheet B2 or C5 used (refer to Annex ZB)		N/A
25.8	IRELAND, UNITED KINGDOM: replacement of figures (rated current/cross-sectional area) in the table		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict

ZB	ANNEX ZB, A-DEVIATIONS (EN 60335-1:2002)		——
4	SWITZERLAND: information about batteries		N/A
7.1	ITALY: the voltage is 220 V/380 V		N/A
	SPAIN: the voltages are 127 V/220 V and 220 V/380 V		N/A
25.6	IRELAND / UNITED KINGDOM: regulations concerning plugs to be fitted to domestic appliances		N/A

ANNEX IEC 60335-1/A2: 2006			
5	GENERAL CONDITIONS FOR THE TESTS		—
5.3	(Addition:) The test of 19.14 is carried out before the tests of 19.11 (IEC 60335-1/A2: 2006)		N/A
7	MARKING AND INSTRUCTIONS		—
7.5	(Replacement:) the power input is related to the arithmetic mean value of the rated voltage range (IEC 60335-1/A2 : 2006)		N/A
7.6	(Replacement:) -symbol IEC 60417-5032-1 (DB:2002-10) -symbol IEC 60417-5032-2 (DB:2002-10) (IEC 60335-1/A2 : 2006)	3 ~ 3N ~	N/A
	(Replacement:) -symbol ISO 7000-1641 (DB:2004-01)] (IEC 60335-1/A2 : 2006)		N/A
	(Addition:) -symbol ISO 7000-0790 (DB:2004-01) (IEC 60335-1/A2 : 2006)		N/A
7.12	(Addition:) This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety (IEC 60335-1/A2: 2006)		N/A
	(Addition:) Children should be supervised to ensure that they do not play with the appliance (IEC 60335-1/A2: 2006)		N/A
8	PROTECTION AGAINST ACCESS TO LIVE PARTS		—
8.1.4	Accessible part not considered live if:		
	(Addition:) -- for voltages having a peak value over 15 kV, the energy in the discharge shall not exceed 350 mJ.(IEC 60335-1/A2: 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	(Addition:) The quantity of electricity and energy in the discharge is measured using a resistor having anominal non-inductive resistance of 2 000 Ω (IEC 60335-1/A2: 2006)		N/A
8.2	(Replacement:) Compliance is checked by inspection and by applying test probe B of IEC 61032 in accordance with the conditions specified in 8.1.1. (IEC 60335-1/A2 : 2006)		N/A
10	**POWER INPUT AND CURRENT**		—
10.1	(Addition:) The permissible deviations apply for both limits of the range for appliances marked with a rated voltage range having limits differing by more than 10 % of the arithmetic mean value of the range. (IEC 60335-1/A2: 2006)		N/A
	(Addition:) The test is carried out at both the upper and lower limits of the ranges for appliances marked with one or more rated voltage ranges, unless (IEC 60335-1/A2: 2006)		N/A
	(Addition:) the marking of the rated power input is related to the arithmetic mean value of the relevant voltage range, in which case the test is carried out at a voltage equal to the arithmetic mean value of that range (IEC 60335-1/A2: 2006)		N/A
10.2	(Addition:) The permissible deviations apply for both limits of the range for appliances marked with a rated voltage range having limits differing by more than 10 % of the arithmetic mean value of the range. (IEC 60335-1/A2: 2006)		N/A
	(Addition:) The test is carried out at both the upper and lower limits of the ranges for appliances marked with one or more rated voltage ranges, unless (IEC 60335-1/A2: 2006)		N/A
	(Addition:) the marking of the rated current is related to the arithmetic mean value of the relevant voltage range, in which case the test is carried out at a voltage equal to the arithmetic mean value of that range (IEC 60335-1/A2: 2006)		N/A
11	**HEATING**		—
	(Replacement:) Table 3 - Maximum normal temperature rises replace the terms "class A, class E, class B, class F and class H" by the terms "class 105, class 120, class 130, class 155 and class 180" (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	(Replacement:) Rubber, polychloroprene or polyvinyl chloride insulation of internal and external wiring, including supply cords: (IEC 60335-1/A2 : 2006)		N/A
	- without temperature rating or with a temperature rating not exceeding 75°C, limit:50K		N/A
	- with temperature rating (T) where T exceeds 75°C, limit: T-25		N/A
14	TRANSIENT OVERVOLTAGES		—
	(Replacement:) Impulse test voltage has a no-load waveshape corresponding to the 1,2/50 µs standard impulse specified in IEC 61180-1, supplied from a generator having a conventional impedance not exceeding 42 ohms. (IEC 60335-1/A2 : 2006)		N/A
	Impulse test voltage is applied three times for each polarity with intervals of at least 1 s (IEC 60335-1/A2 : 2006)		N/A
16	Leakage current and electric strength		—
16.3	(Replacement:) Immediately after the test of 16.2, the insulation is subjected to a voltage having a frequency of 50 Hz or 60Hz for 1 mins in according with IEC 61180-1. (IEC 60335-1/A2 : 2006)		P
19	ABNORMAL OPERATION		—
19.1	(Addition:) Appliances incorporating contactors or relays are subjected to the test of 19.14. (IEC 60335-1/A2 : 2006)		N/A
19.7	(Replacement:) In the second paragraph, replace "IEC 60252" by "IEC 60252-1" (IEC 60335-1/A2: 2006)		N/A
19.11	(Replacement:) Appliances incorporating an electronic circuit are subjected to the tests of 19.11.3 and 19.11.4. (IEC 60335-1/A2 : 2006)	Deleted by Corr. 1	—
	(Addition:) Appliances incorporating an electronic circuit that relies upon a programmable component to function correctly are subjected to the test of 19.11.4.8, unless restarting at any point in the operating cycle after interruption of operation due to a supply voltage dip will not result in a hazard. (IEC 60335-1/A2 : 2006)		N/A
	(Addition:) The test is carried out after removal of all batteries and other components intended to maintain the programmable component supply voltage during mains supply voltage dips, interruptions and variations. (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	(Replacement:) Appliances having a device with an off position obtained by electronic disconnection, or a device that can place the appliance in a stand-by mode, are subjected to the tests of 19.11.4. (IEC 60335-1/A2 : 2006)		N/A
	(Replacement:) If a conductor of a printed board becomes open-circuited, the appliance is considered to have withstood the particular test, provided both of the following conditions are met: (IEC 60335-1/A2 : 2006)		—
	- the material of the printed circuit board withstands the burning test of annex E		N/A
	- any loosened conductor does not reduce the clearances or creepage distances between live parts and accessible metal parts below the values specified in cl. 29		N/A
19.11.2	(Addition:) g) failure of an electronic power switching device in a partial turn-on mode with loss of gate (base) control. During this test, winding temperatures shall not exceed the values given in 19.7. (IEC 60335-1/A2 : 2006)		N/A
19.11.4	(Replacement:) In the first paragraph, replace "switch" by "device" In the last paragraph, replace "arresters" by "protective devices" (IEC 60335-1/A2 : 2006)		N/A
19.11.4.6	(Replacement:) The appliance is subjected to the Class 3 voltage dips and interruptions in accordance with IEC 61000-4-11. The values specified in Table 1 and Table 2 of IEC 61000-4-11 are applied at zero crossing of the supply voltage (IEC 60335-1/A2: 2006)		N/A
19.11.4.8	(Addition:) The appliance is supplied at rated voltage and operated under normal operation. After approximately 60 s, the power supply voltage is reduced to a level such that the appliance ceases to respond to user inputs or parts controlled by the programmable component cease to operate, whichever occurs first. This value of supply voltage is recorded. (IEC 60335-1/A2 : 2006)		N/A
	(Addition:) The appliance is supplied at rated voltage and operated under normal operation. The voltage is then reduced to a value of approximately 10 % less than the recorded voltage. It is held at this value for approximately 60 s and then increased to rated voltage. The rate of decrease and increase of the power supply voltage is to be approximately 10 V/s. (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	(Addition:) The appliance shall continue to either operate normally from the same point in its operating cycle at which the voltage decrease occurred or a manual operation shall be required to restart it. (IEC 60335-1/A2 : 2006)		N/A
19.13	(Replacement:) After the tests, and when the appliance has cooled to approximately room temperature, compliance with Clause 8 shall not be impaired and the appliance shall comply with 20.2 if it can still be operated. (IEC 60335-1/A2:2006)		P
	(Addition:) After the operation or interruption of a control, clearances and creepage distances across the functional insulation shall withstand the electric strength test of 16.3, the test voltage, however, being twice the working voltage. (IEC 60335-1/A2:2006)		P
	(Replacement.) Appliances tested with an electronic switch in the off position, or in the stand-by mode, shall (IEC 60335-1/A2 : 2006)		—
	– not become operational, or		N/A
	– if they become operational, not result in a dangerous malfunction during or after the tests of 19.11.4.		N/A
19.14	(Addition:) Appliances are operated under the conditions of Clause 11. Any contactor or relay contact that operates under the conditions of Clause 11 is short-circuited. (IEC 60335-1/A2 : 2006)		N/A
22	CONSTRUCTION		—
22.2	(Replacement:) Single-pole switches and single-pole protective devices that disconnect heating elements from the supply mains in single-phase, permanently connected class 0I appliances and class I appliances shall be connected to the phase conductor. (IEC 60335-1/A2 : 2006)		N/A
22.5	(Replacement:) No risk of electric shock from a capacitor having a rated capacitance exceeding 0.1uF when touching the pins of the plug, the appliance being disconnected from the supply at the instant of voltage peak. (IEC 60335-1/A2 : 2006)		N/A
	The voltage shall not exceed 34 V		N/A
22.21	(Addition:) This requirement does not apply to magnesium oxide and mineral ceramic fibres used for the electrical insulation of heating elements (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
22.32	(Addition:) Insulating material in which heating conductors are embedded is considered to be basic insulation and not reinforced insulation. (IEC 60335-1/A2 : 2006)		N/A
22.35	(Replacement:) For constructions other than those of class III, handles, levers and knobs that are held or actuated in normal use shall not become live in the event of a failure of basic insulation (IEC 60335-1/A2: 2006)		N/A
	If these handles, levers and knobs are of metal and if their shafts or fixings are likely to become live in the event of a failure of basic insulation, they shall be adequately covered by insulating material or their accessible parts shall be separated from their shafts or fixings by supplementary insulation. (IEC 60335-1/A2 : 2006)		N/A
22.40	(Addition:) Unless the appliance can operate continuously, automatically or remotely without giving rise to a hazard, appliances for remote operation shall be fitted with a switch for stopping the operation of the appliance. The actuating member of this switch shall be easily visible and accessible. (IEC 60335-1/A2 : 2006)		N/A
22.44	(Replacement:) Appliances shall not have an enclosure that is shaped or decorated like a toy. (IEC 60335-1/A2 : 2006)		N/A
22.49	(Addition:) For remote operation, duration of operation set before the appliance can be started unless the appliance switches off automatically at the end of a cycle or it can operate continuously without giving rise to a hazard. (IEC 60335-1/A2 : 2006)		N/A
22.50	(Addition:) Controls incorporated in the appliance, if any, shall take priority over controls actuated by remote operation. (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
22.51	(Addition) A control on the appliance shall be manually adjusted to the setting for remote operation before the appliance can be operated in this mode. There shall be a visual indication on the appliance showing that the appliance is adjusted for remote operation. The manual setting and the visual indication of the remote mode are not necessary on appliances that can - operate continuously, or - operate automatically, or - be operated remotely, without giving rise to a hazard. (IEC 60335-1/A2 : 2006)		N/A
22.52	(Addition :) Socket-outlets on appliances accessible to the user shall be in accordance with the socket-outlet system used in the country in which the appliance is sold. (IEC 60335-1/A2 : 2006)		N/A

24	COMPONENTS		—
24.1	(Replacement) Components not tested and found to comply with relevant IEC standard for the number of cycles specified are tested in accordance with 24.1.1 to 24.1.9 (IEC 60335-1/A2 : 2006)		N/A
	(Addition:) Lampholders and starterholders that have not been previously tested and found to comply with the relevant IEC standard are tested as a part of the appliance and shall additionally comply with the gauging and interchangeability requirements of the relevant IEC standard under the conditions occurring in the appliance. (IEC 60335-1/A2 : 2006)		N/A
24.1.7	(Addition:) If the remote operation of the appliance is via a telecommunication network, the relevant standard for the telecommunication interface circuitry in the appliance is IEC 62151 (IEC 60335-1/A2 : 2006)		N/A
24.1.8	(Addition:) The relevant standard for thermal links is IEC 60691. Thermal links that do not comply with IEC 60691 are considered to be an intentionally weak part for the purposes of Clause 19. (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
24.1.9	(Addition:) Relays, other than motor starting relays, are tested as part of the appliance. However, they are also tested in accordance with Clause 17 of IEC 60730-1 under the maximum load conditions occurring in the appliance for at least the number of operations in 24.1.4 selected according to the relay function in the appliance. (IEC 60335-1/A2 : 2006)		N/A

25	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CORDS		—
25.7	(Replacement:) Supply cords shall be one of the following types: (IEC 60335-1/A2)		—
	– Rubber sheathed (code designation 60245 IEC 53) (IEC 60335-1/A2:2006)		N/A
	– Polychloroprene sheathed (code designation 60245 IEC 57) (IEC 60335-1/A2: 2006)		N/A
	– Cross-linked polyvinyl chloride sheathed (code designation 60245 IEC 87) (IEC 60335-1/A2 : 2006)		N/A
	– Polyvinyl chloride sheathed. These cords shall not be used if they are likely to touch metal parts having a temperature rise exceeding 75 K during the test of Clause 11. Their properties shall be at least those of (IEC 60335-1/A2 : 2006)		—
	◦ light polyvinyl chloride sheathed cord (code designation 60227 IEC 52), for appliances having a mass not exceeding 3 kg; (IEC 60335-1/A2: 2006)		N/A
	◦ ordinary polyvinyl chloride sheathed cord (code designation 60227 IEC 53), for other appliances; (IEC 60335-1/A2: 2006)		N/A
	– Heat resistant polyvinyl chloride sheathed. These cords shall not be used for type X attachment other than specially prepared cords. Their properties shall be at least those of (IEC 60335-1/A2: 2006)		—
	◦ heat-resistant light polyvinyl chloride sheathed cord (code designation 60227 IEC 56), for appliances having a mass not exceeding 3 kg; (IEC 60335-1/A2 : 2006)		N/A
	◦ heat-resistant polyvinyl chloride sheathed cord (code designation 60227 IEC 57), for other appliances. (IEC 60335-1/A2 : 2006)		N/A

26	Terminals for external conductors		—
26.3	(Replacement:) Compliance checked by inspection and by the test of subclause 9.6 of IEC 60999-1, the torque applied being equal to two-thirds of the torque specified. Nominal diameter of thread (mm); screw category; torque (Nm) (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
26.6	(Replacement:) Terminals for type X attachment and for connection to fixed wiring suitable for connection of conductors with required cross-sectional area according to table 13; rated current (A); nominal cross-sectional area (mm^2): (IEC 60335-1/A2 : 2006)		N/A

27	**Provision for earthing**		—
27.6	(Replacement:) The printed conductors of printed circuit boards not used to provide earthing continuity in hand held appliances (IEC 60335-1/A2 : 2006)		N/A
	They may be used in other appliances if at least two tracks are used with independent soldering points and the appliance complies with requirements of 27.5 for each circuit (IEC 60335-1/A2 : 2006)		N/A

28	SCREWS AND CONNECTIONS		—
28.1	(Replacement:) Table 14 the penultimate row: > 4.7 and ≤ 5.3 Torque Nm: 0.8, 2.0, 1.0 (IEC 60335-1/A2 : 2006)		N/A
28.3	(Replacement:) Thread-cutting (self-tapping) screws and thread roller screws only used for electrical connections if they generate a full form standard machine screw thread. (IEC 60335-1/A2 : 2006)		N/A
	Such screws not used if they are likely to be operated by the user or installer. (IEC 60335-1/A2 : 2006)		N/A
	Thread-cutting, thread rolling and space-threaded screws may be used in connections providing earthing continuity provided it is not necessary to disturb the connection: – in normal use, – during user maintenance, – when replacing a supply cord having a type X attachment, or – during installation. (IEC 60335-1/A2 : 2006)		N/A
	At least two screws must be used for each connection providing earthing continuity unless the screw forms a thread having a length of at least half the diameter of the screw. (IEC 60335-1/A2 : 2006)		N/A

29	**Clearances, creepage distances and solid insulation**		—
	(Replacement:) For coatings used on printed circuits boards to protect the microenvironment (Type 1 coating) or to provide basic insulation (Type 2 coating), annex J applies (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
	The microenvironment is pollution degree 1 under Type 1 coating (IEC 60335-1/A2 : 2006)		N/A
	No creepage distance or clearance requirements under Type 2 coating (IEC 60335-1/A2 : 2006)		N/A
29.1.1	(Replacement:) Clearances of basic insulation withstand the overvoltages, taking into account the rated impulse voltage, or cl. 14. (IEC 60335-1/A2 : 2006)		P

30	RESISTANCE TO HEAT AND FIRE		—
30.2	(Replacement:) Parts of non-metallic material resistant to ignition and spread of fire (IEC 60335-1/A2 : 2006)		P
	This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames that originate inside the appliance. (IEC 60335-1/A2 : 2006)		N/A
	Compliance checked by test of 30.2.1 (IEC 60335-1/A2 : 2006)		N/A
	Appliances for remote operation, 30.2.3 is applicable (IEC 60335-1/A2 : 2006)		N/A
	For based material of printed circuit boards, 30.2.4 is applicable (IEC 60335-1/A2 : 2006)		N/A
	Tests carried out on parts of non-metallic material that have been removed from the appliance (IEC 60335-1/A2 : 2006)		P
	When the glow-wire test is carried out, the parts are placed in the same orientation as they would be in normal use (IEC 60335-1/A2 : 2006)		P
	These tests are not carried out on the insulation of wires (IEC 60335-1/A2 : 2006)		P
30.2.1	(Replacement:) Glow-wire test of IEC 60695-2-11 at 550 °C, unless		N/A
	the material is classified at least HB40 according to IEC 60695-11-10 (IEC 60335-1/A2 : 2006)		N/A
	Parts for which the glow-wire test cannot be carried out meet the requirements in ISO9772 for category HBF material (IEC 60335-1/A2 : 2006)		N/A
30.2.3	(Replacement:) Appliances operated while unattended, tested as specified in 30.2.3.1 and 30.2.3.2 (IEC 60335-1/A2 : 2006)		P
	Test not applicable to conditions as specified (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
30.2.3.1	(Replacement:) Parts of insulating material supporting connections carrying a current exceeding 0.2A during normal operation, and (IEC 60335-1/A2 : 2006)		P
	Parts of non-metallic material within a distance of 3 mm of such connections (IEC 60335-1/A2 : 2006)		P
	However, the glow-wire test is not carried out on parts of material classified as having a glow-wire flammability index of at least 850 °C according to IEC 60695-2-12. (IEC 60335-1/A2 : 2006)		N/A
	The glow-wire test is not carried out on small parts that comply with Annex E or classify as V-0 or V-1 according to IEC 60695-11-10, provided that the sample was not thicker than the relevant part of the appliance. (IEC 60335-1/A2 : 2006)		N/A
30.2.3.2	(Replacement:) Parts of non-metallic material supporting current-carrying connections, and (IEC 60335-1/A2 : 2006)		P
	parts of non-metallic material within a distance of 3mm, subjected to glow-wire test of IEC 60695-2-11. (IEC 60335-1/A2 : 2006)		P
	Test not carried out on material having a glow-wire ignition temperature according to IEC 60695-2-13 of at least: (IEC 60335-1/A2 : 2006)		N/A
	– 775 °C, for connections that carry a current exceeding 0,2 A during normal operation,		N/A
	– 675 °C, for other connections		N/A
	Glow-wire test of IEC 60695-2-11, the temperature being:(IEC 60335-1/A2 : 2006)		P
	-750°C, for connections carrying a current exceeding 0,2A during normal operation		P
	-650°C, for other connections		N/A
	Parts that during the test produce a flame persisting longer than 2 s, tested as specified (IEC 60335-1/A2 : 2006)		N/A
	If a flame persists longer than 2 s during the test, parts above the connection, as specified, subjected to the needle-flame test of annex E, unless (IEC 60335-1/A2 : 2006)		N/A
	the material is classified as V-0 or V-1 according to IEC 60695-11-10 provided that the sample was not thicker than the relevant part of the appliance. (IEC 60335-1/A2 : 2006)		N/A
30.2.4	Base material of printed circuit boards subjected to needle-flame test of annex E (IEC 60335-1/A2 : 2006)		N/A
	Test not applicable to conditions as specified (IEC 60335-1/A2 : 2006)		N/A

IEC / EN 60335-2-41			
Clause	Requirement - Test	Result - Remark	Verdict
32	Radiation, toxicity and similar hazards		—
	(Replacement:) Appliance does not emit harmful radiation (IEC 60335-1/A2 : 2006)		P
	(Replacement:) Appliance does not present a toxic or similar hazard (IEC 60335-1/A2 : 2006)		P
E	ANNEX E (NORMATIVE) NEEDLE-FLAME TEST (IEC 60335-1/A2 : 2006)		
	Needle-flame test carried out in accordance with IEC 60695-11-5, with the following modifications:		—
7	Severities		
	(Replacement:) The duration of application of the test flame is 30 s ± 1 s		N/A
9	Test procedure		
9.1	(Modification:) The specimen so arranged that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		N/A
9.2	(Modification:) The first paragraph does not apply		N/A
	(Addition:) If possible, the flame is applied at least 10 mm from a corner		N/A
9.3	(Replacement:) If the specimen does not withstand the test, the test may be repeated on two further specimens, both withstanding the test		N/A
11	Evaluation of test results		
	(Addition:) The duration of burning not exceeding 30s		N/A
	(Addition:) However, for printed circuit boards, the duration of burning not exceeding 15s		N/A
J	ANNEX J (NORMATIVE) COATED PRINTED CIRCUIT BOARDS (IEC 60335-1/A2:2006)		—
	Testing of protective coatings of printed circuit boards carried out in accordance with IEC 60664-3 with the following modifications:		N/A
5.7	Conditioning of the test specimens		—
	When production samples are used, three samples of the printed circuit board are tested		N/A
5.7.1	Cold		—
	The test is carried out at -25°C		N/A
5.7.3	Rapid change of temperature		—
	Severity 1 is specified		N/A
5.9	Additional tests		—
	This subclause is not applicable		N/A

Appendix 2: Tables with test results
Photos of the appliances

Tables:

10.1	TABLE: Power input deviation				P
Input deviation of/at:	P rated (W)	P measured (W)	dP	Required dP	Remark
230V	260	208	-20,0%	+20%	P

10.2	TABLE: Current deviation				N/A
Current deviation of/at:	I rated (A)	I measured (A)	dI	Required dI	Remark

11.8	TABLE: Heating test, thermocouples		P
	Test voltage (V) ..... :	243,8	----
	Ambient (°C) ..... :	25,0 (water temp.: 35°C)	----

Thermocouple locations	dT (K)	Max. dT (K)
Motor lead	31	155 (T180)
Capacitor	23	45 (T70)

11.8	TABLE: Heating test, resistance method		P
	Test voltage (V) ..... :	243,8	----
	Ambient, t_1 (°C) ..... :	24,8	----
	Ambient, t_2 (°C) ..... :	25,0	----

Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class
Primary	31,450	37,211	47	115	155
Auxiliary	62,370	72,448	42	115	155

13.2	TABLE: Leakage current		P
	Heating appliances: 1.15 x rated input ..... :	N/A	----
	Motor-operated and combined appliances: 1.06 x rated voltage ..... :	243,8	----

Leakage current between	I (mA)	Max. allowed I (mA)
Live parts and earthed metal parts	0,24	0,75

13.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
Basic insulation		1000	No

14	TABLE: Transient overvoltages				N/A
Clearance between:	Cl (mm)	Required Cl (mm)	Rated impulse voltage (V)	Impulse test voltage (V)	Flashover (Yes/No)

16.2	TABLE: Leakage current		P
	Single phase appliances: 1.06 x rated voltage..... :	243,8V	----
	Three phase appliances 1.06 x rated voltage divided by √3: ..... :	N/A	----
Leakage current between		I (mA)	Max. allowed I (mA)
Live parts and earthed metal parts		0,19	0,75

16.3	TABLE: Electric strength		P
Test voltage applied between:		Voltage (V)	Breakdown (Yes/No)
Basic insulation		1250	No

17	TABLE: Overload protection, temperature rise		N/A
Temperature rise of part/at:		dT (K)	Max. dT (K)

19.7/ AnnexD	TABLE: Abnormal operation, locked rotor/moving parts		P
	Test voltage (V)..... :	230	----
	Ambient, t_1 (°C) ..... :	23	----
	Ambient, t_2 (°C) ..... :	23	----

Temperature of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)
Primary winding	-	-	-	174	240 (Class 155)
Auxiliary winding	-	-	-	140	240 (Class 155)
Note: the motor was stalled for 72 hours.					

19.9	TABLE: Abnormal operation, running overload		N/A
	Test voltage (V) ..... :		—
	Ambient, t_1 (°C) ..... :		—
	Ambient, t_2 (°C) ..... :		—

Temperature of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	T (°C)	Max. T (°C)

19.13	TABLE: Abnormal operation, temperature rises	N/A

Thermocouple locations	dT (K)	Max. dT (K)

24.1	TABLE: Components				
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Motor-run capacitor	Wenling Xinghuo Capacitor Factory	CBB60	AC 450V 50/60Hz 6μF T70	IEC/EN 60252-1	VDE/ 40017696
Motor thermal protector	Baoying Electric Appliances Factory	JW6-II	AC 250V Operating Temp.: 140°C	IEC/EN 60730-1 IEC/EN 60730-2-2	VDE/ 128781
Motor lead	Xiangshan Fahua Electric Wire & Cable Co., Ltd.	H05S-K	450V T180 0,75mm^2	DIN VDE 0282-3 HD 22.3	VDE/ 40016704
Cover	Tiantai Debang Engineering Plastic Co., Ltd.	GPP4	Min. Thickness: 2,5mm	IEC/EN 60335-2-41 IEC/EN 60335-1	Tested in appliance
Quick connector	China Shenma Engineering Plastics Co., Ltd.	2700F	Min. Thickness: 1,0mm	IEC/EN 60335-2-41 IEC/EN 60335-1	Tested in appliance
[1)] An asterisk indicates a mark which assures the agreed level of surveillance					

28.1	TABLE: Threaded part torque test	P

Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)
Earthing terminal	3,8	II	1,2

29.1	TABLE: Clearances					P
	Overvoltage category ... :	II				----
		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5					N/A
500	0,5					N/A
800	0,5					N/A
1 500	0,5					N/A
2 500	1,5	X	X			P
4 000	3,0					N/A
6 000	5,5					N/A
8 000	8,0					N/A
10 000	11,0					N/A

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9		----	----	N/A
>50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	----		----	N/A
>50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	----	----		N/A
>50 and ≤ 125	0,3	0,8	1,1	1,5	1,9	2,1	2,4		----	----	N/A
>50 and ≤ 125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	----		----	N/A
>50 and ≤ 125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	----	----		N/A
>125 and ≤ 250	0,6	1,3	1,8	**2,5**	3,2	3,6	4,0	X	----	----	P
>125 and ≤ 250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	----			N/A
>125 and ≤ 250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	----	----		N/A
>250 and ≤ 400	1,0	2,0	2,8	4,0	5,0	5,6	6,3		----	----	N/A
>250 and ≤ 400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	----		----	N/A
>250 and ≤ 400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	----	----		N/A
>400 and ≤ 500	1,3	2,5	3,6	5,0	6,3	7,1	8,0		----	----	N/A
>400 and ≤ 500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	----		----	N/A

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
>400 and ≤ 500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	—	—		N/A
>500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0		—	—	N/A
>500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	—		—	N/A
>500 and ≤ 800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	—	—		N/A
>800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5		—	—	N/A
>800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	—		—	N/A
>800 and ≤ 1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	—	—		N/A
>1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0		—	—	N/A
>1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	—		—	N/A
>1000 and ≤ 1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	—	—		N/A
>1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0		—	—	N/A
>1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	—		—	N/A
>1250 and ≤ 1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	—	—		N/A
>1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0		—	—	N/A
>1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	—		—	N/A
>1600 and ≤ 2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	—	—		N/A
>2000 and ≤ 2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0		—	—	N/A
>2000 and ≤ 2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0	—		—	N/A
>2000 and ≤ 2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	—	—		N/A
>2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0		—	—	N/A
>2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	—		—	N/A
>2500 and ≤ 3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	—	—		N/A
>3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0		—	—	N/A
>3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	—		—	N/A
>3200 and ≤ 4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	—	—		N/A
>4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0		—	—	N/A
>4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	—		—	N/A
>4000 and ≤ 5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	—	—		N/A

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										P
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
>5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0		—	—	N/A
>5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	—		—	N/A
>5000 and ≤ 6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	—	—		N/A
>6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0		—	—	N/A
>6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	—		—	N/A
>6300 and ≤ 8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	—	—		N/A
>8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0		—	—	N/A
>8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	—			N/A
>8000 and ≤ 10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	—	—		N/A
>10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0		—	—	N/A
>10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	—		—	N/A
>10000 and ≤ 12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	—	—		N/A
*), B=Basic, S=Supplementary and R=Reinforced											

29.2	TABLE: Creepage distances, functional insulation							P
Working voltage (V)	Creepage distance (mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	Verdict / Remark
> 50	0,2	0,6	0,8	1,1	1,4	1,6	1,8	N/A
>50 and ≤ 125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	N/A
>125 and ≤ 250	0,4	1,0	1,4	**2,0**	2,5	2,8	3,2	P
>250 and ≤ 400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	N/A
>400 and ≤ 500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	N/A
>500 and ≤ 800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	N/A
>800 and ≤ 1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	N/A
>1000 and ≤ 1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	N/A
>1250 and ≤ 1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	N/A
>1600 and ≤ 2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	N/A
>2000 and ≤ 2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	N/A
>2500 and ≤ 3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	N/A
>3200 and ≤ 4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	N/A
>4000 and ≤ 5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	N/A
>5000 and ≤ 6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	N/A
>6300 and ≤ 8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	N/A
>8000 and ≤ 10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	N/A
>10000 and ≤ 12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	N/A

30.1	TABLE: Ball pressure			P
Part	Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)	
Cover	75	0,8	2,0	
Quick connector	125	1,5	2,0	

Appendix – Photographs

Report Ref. No: SH09030367-001

Photo 1.

Description: Overview

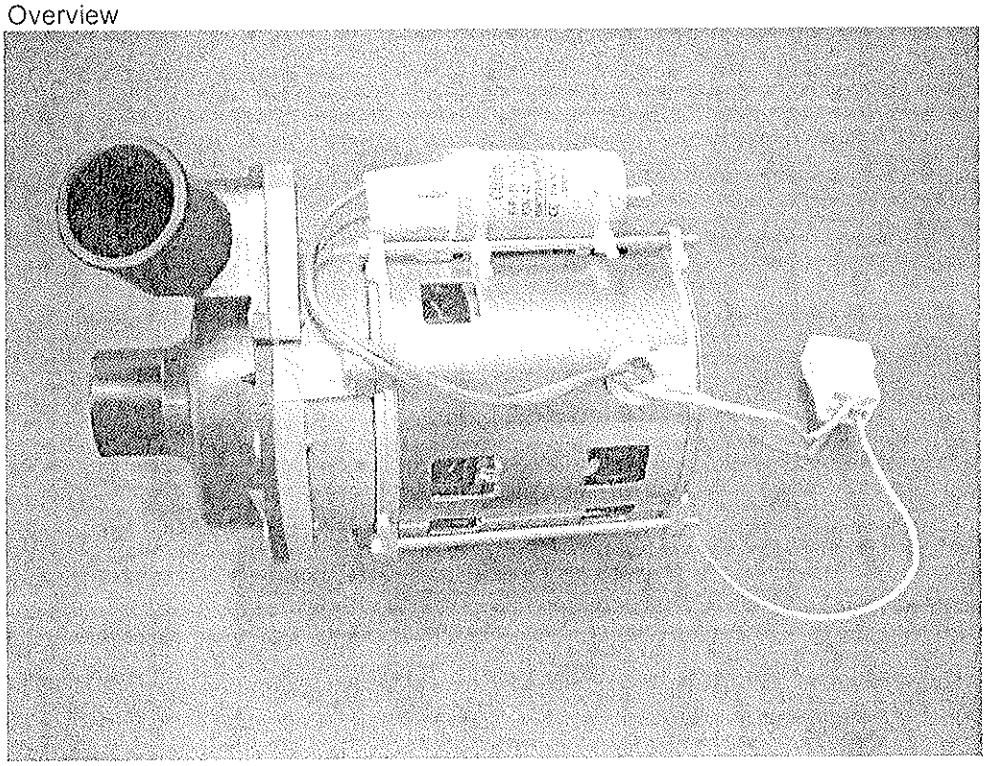
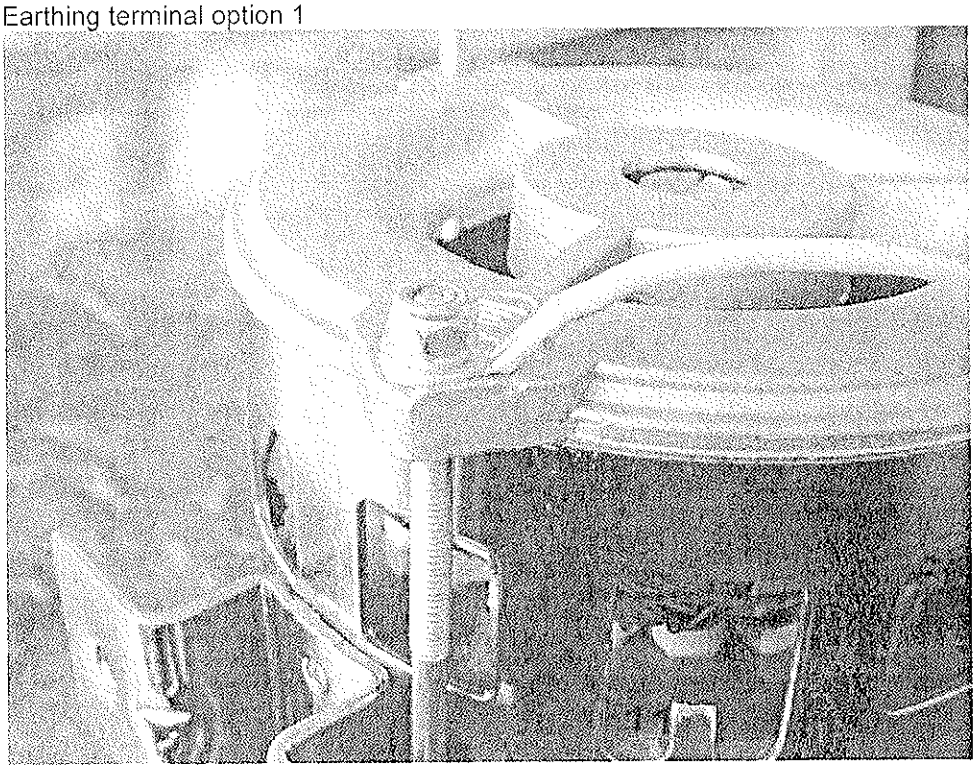


Photo 2.

Description: Earthing terminal option 1



Appendix – Photographs

Report Ref. No: SH09030367-001

Photo 3.

Description: Earthing terminal option 2

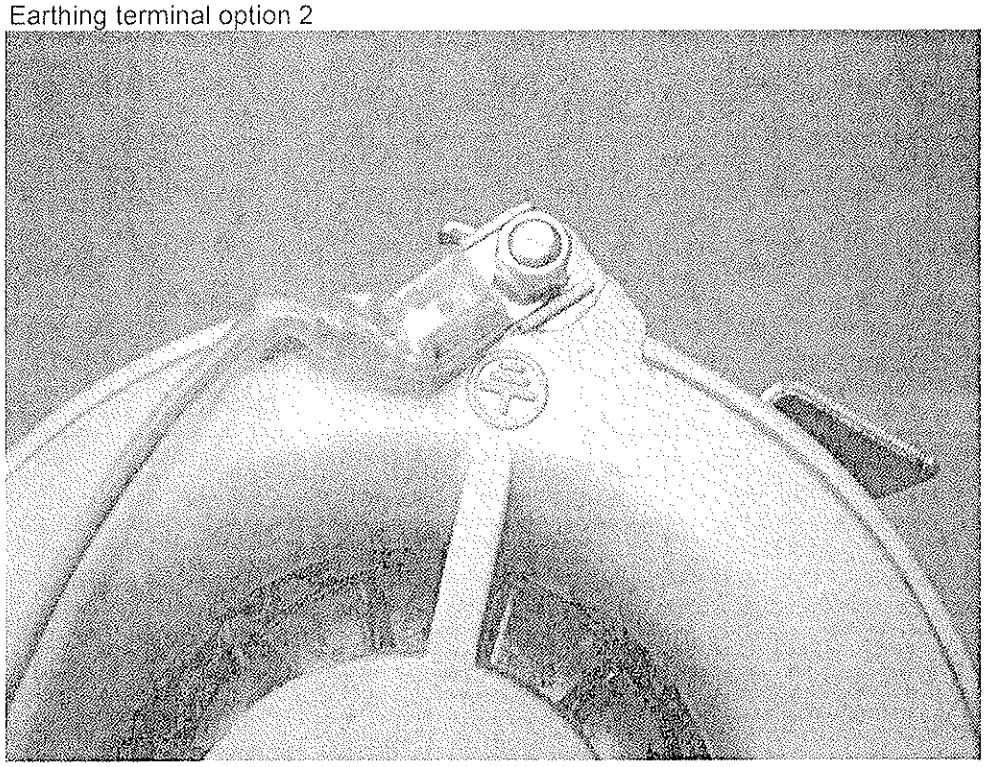
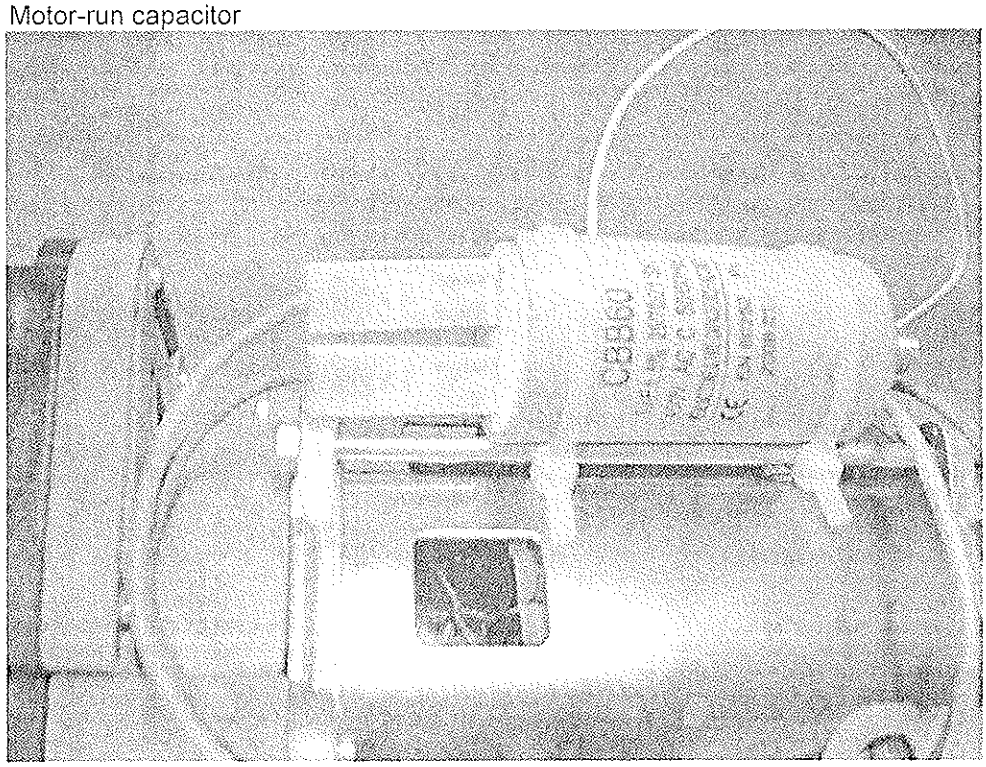


Photo 4.

Description: Motor-run capacitor



Appendix -- Photographs

Report Ref. No: SH09030367-001

Photo 5.

Description: Fan blade

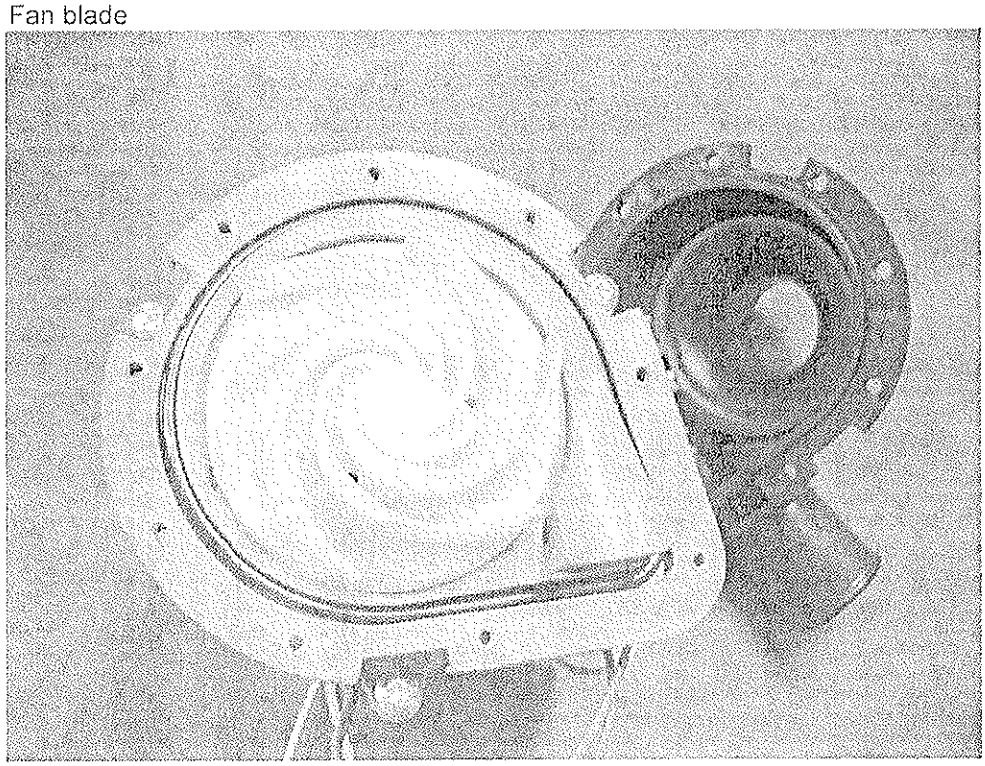
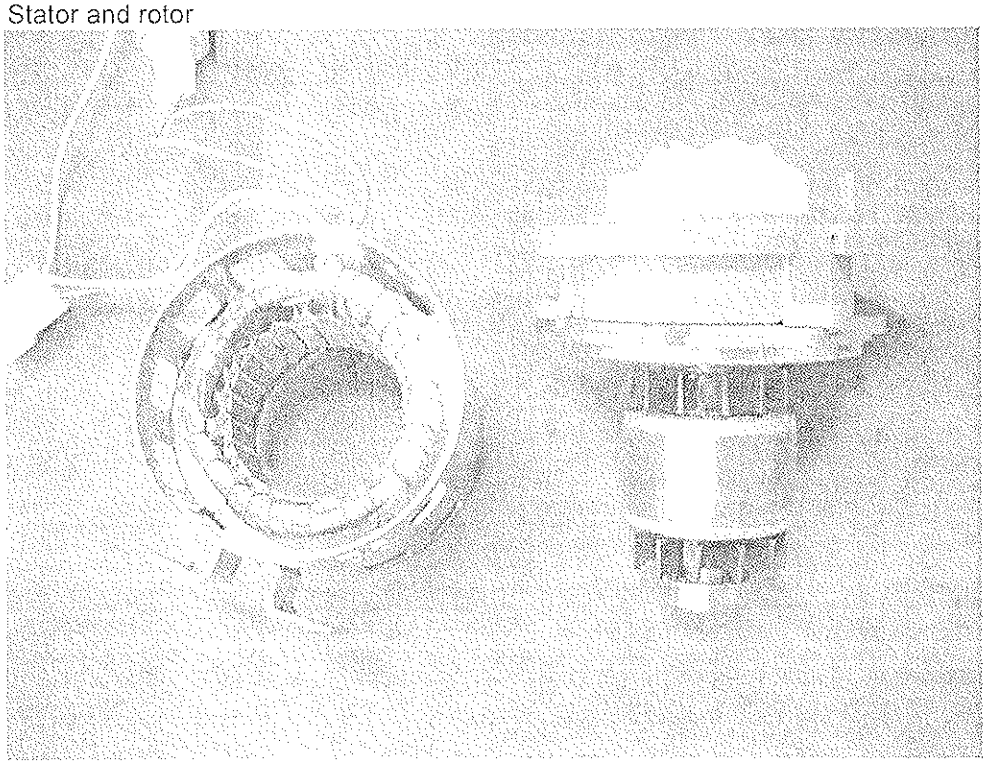


Photo 6.

Description: Stator and rotor

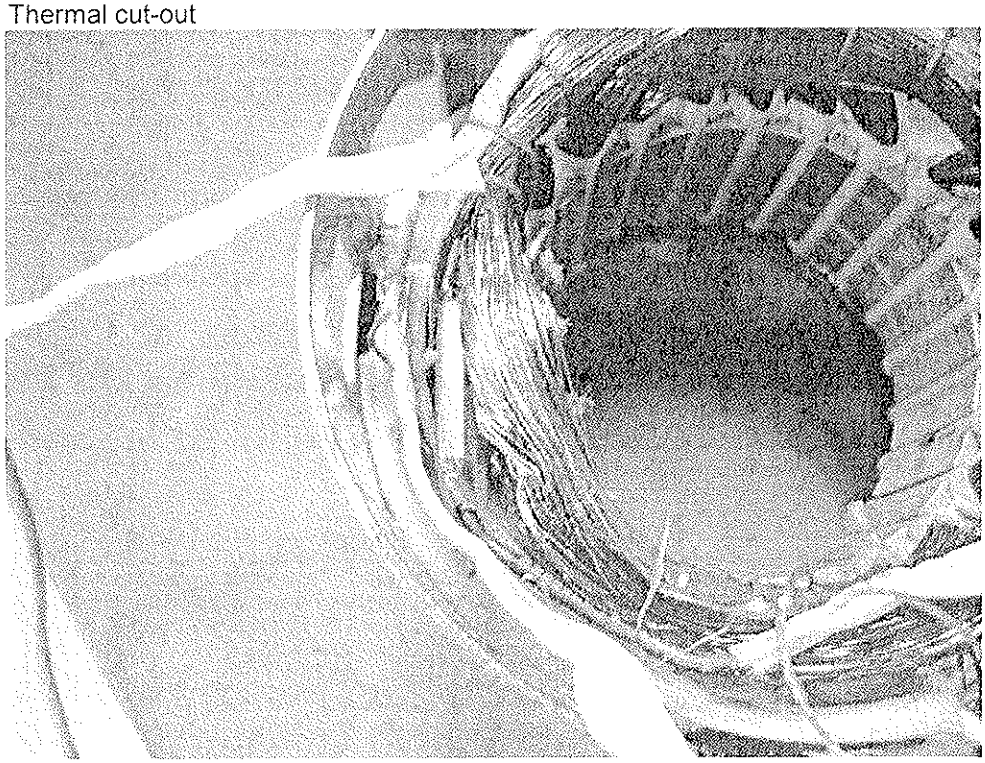


Appendix – Photographs

Report Ref. No: SH09030367-001

Photo 7.

Description: Thermal cut-out



FECHA: 18/07/2008
OBJETO DE INFORME: Temperatura de la bomba XHJ (código: 00650R0006GIRX) dentro del conjunto monobloc AR700.

Ensayo y resultado prueba:

Se coloca una sonda de temperatura tipo K (ver foto.1) tocando el bobinado de la bomba, tras unas 6 horas de funcionamiento continuado del monobloc AR700 (tal y como muestra la foto.2) se comprueba que el máximo incremento de temperatura entre la temperatura del bobinado y la temperatura ambiente es de unos 57ºC.

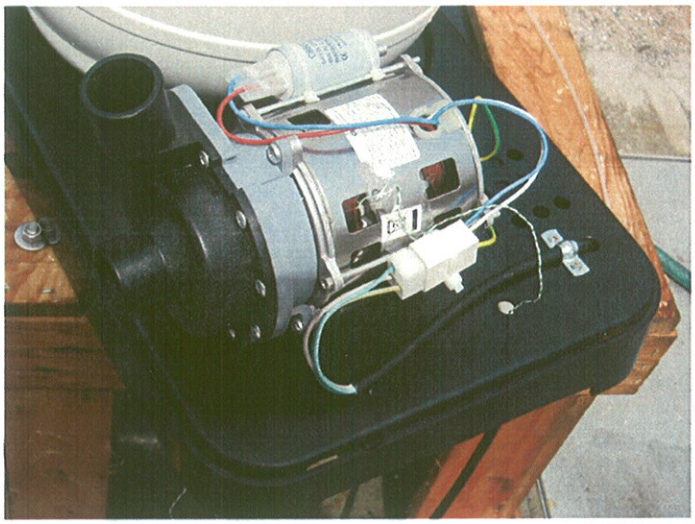


Foto.1_Posicionar sonda temperatura tipo K.

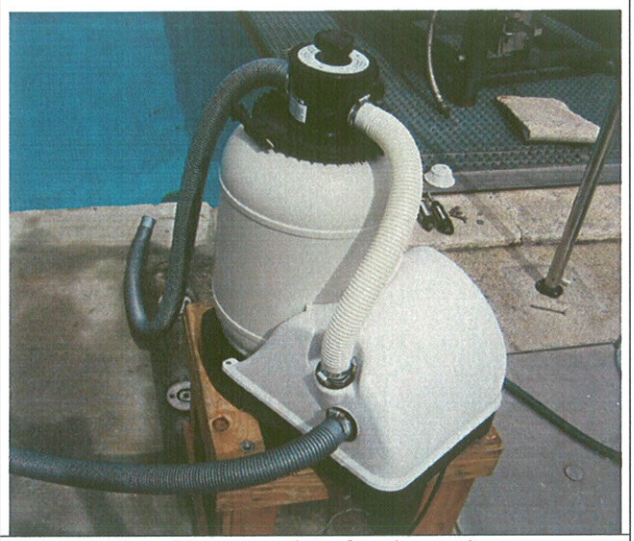


Foto .2_Monobloc completo funcionando.

Conclusiones

De acuerdo con la norma EN 60335-1 de seguridad eléctrica en aparatos electrodomésticos, en su apartado 11, tabla 3, de incrementos máximos permitidos, la variación máxima de temperatura entre el exterior y el bobinado, para un aislamiento de clase F, es de **115 ºC**.
Los resultados obtenidos nos muestran un calentamiento en bobinado de **57 ºC**.
Al ser el calentamiento en bobinado inferior al límite marcado, el resultado puede considerarse cómo **ACEPTABLE**

Realizado

Narciso Bolívar
Dpto. Técnico

LGAI

LGAI Technological Center, S.A.
Campus de la UAB
Apartado de Correos 18
E - 08193 Bellaterra (Barcelona)
T +34 93 567 20 00
F +34 93 567 20 01
www.appluscorp.com

INFORME DE ENSAYOS

Expediente número: 08/34601312

Fecha: 28/07/2008
Página: 1 **de** 9

ilac-MRA ENAC ENSAYOS Nº 9/LE/899

Referencia del peticionario

METALAST, SAU
Passeig de Sanllehy, 25
08213 Polinya - Barcelona

El material recibido

Filtro con bomba para piscinas, fabricado por **METALAST, S.A.U.**, modelo **AR 700**, con número de identificción interna 2008659

Ha sido ensayado y es conforme según las especificaciones de la/s norma/s:

UNE EN 20324:1993 +1ª modif. 2000+Err 2004
(eq EN60529:1991 + Err:1993 + A1:200)
"Grado de protección proporcionados por las envolventes (código IP)".

con el siguiente Grado de Protección (Código IP)

IP – X4

Albert Marginet Morales
Responsible C.T. Electricidad
IT & Telecom B.U.
LGAI Technological Center, S.A

José Luis Medina Abellán
Responsable Seguridad Eléctrica
IT & Telecom B.U.
LGAI Technological Center, S.A.

Sólo tienen validez legal los informes con firma original o sus copias compulsadas.
Los resultados que se indican se refieren, exclusivamente, a la muestra, producto o material entregado al Laboratorio, tal como se indica en el apartado de material recibido, y ensayada en las condiciones indicadas en la/s norma/s citadas en el presente documento
La reproducción del presente documento, sólo está autorizada si se hace en su totalidad.
Este documento consta de **9** páginas, de las que **---** son anexos.

INFORME DE ENSAYOS **UNE 20324 (eqv EN 60529)** **Grados de protección proporcionados por las envolventes (Código IP)**	
Expediente nº..... :	08/34601312
Ensayado por ..... :	Sergi Ulldemolins
Aprovado por ..... :	Jose Luis Medina
Fecha de recepción ..... :	16/07/2008
Fecha de inicio de los ensayos ..... :	16/07/2008
Fecha de final de los ensayos ..... :	16/07/2008
Laboratorio de ensayos ..... :	APPLUS+ CTC (LGAI Technological Center, S.A.)
Dirección ..... :	Campus de la UAB Aptdo. Correos 18 08193 Bellaterra
Peticionario..... :	METALAST, SAU
Dirección ..... :	Passeig de Sanllehy, 25 08213 Polinya - Barcelona
Norma..... :	UNE EN 20324:1993 +1ª modif. 2000+Err 2004 (eq EN60529:1991 + Err:1993 + A1:200)
Descripción del material ensayado:	
Objeto de ensayo..... :	Filtro para piscinas
Marca..... :	METALAST
Modelo / Tipo ..... :	AR700
Fabricante ..... :	METALAST, S.A.U.

Observaciones:

Condiciones ambientales durante los ensayos.
Temperatura (ºC)..... : 24,6
Humedad relativa (%)..... : 59

Veredictos de los apartados	
El apartado no se aplica a la muestra ensayada:	N(o)P(rocede)
La muestra cumple con los requisitos del apartado :	C(umple)
La muestra no cumple con los requisitos del apartado:	N(o)C(umple)
Los requisitos del apartado no han podido evaluarse:	N(o)R(ealizado)
Observación sobre los resultados del apartado (Núm):	OBS()

Observaciones generales:

"(ver Nota #)" se refiere a información adicional anexada al informe.
"(ver tabla anexa)" se refiere a una tabla anexada al informe.
A lo largo de este informe, una coma es utilizada como separador decimal.
Los resultados que se indican se refieren, exclusivamente, a la muestra, producto, o material entregado al Laboratorio, tal y como se indica en el apartado de material recibido, y ensayada en las condiciones indicadas en la/s norma/s o procedimientos nombrados en el presente documento.

Información general:

Apartado	Requisito – Ensayo	Resultado - Nota	Veredicto
5	GRADOS DE PROTECCIÓN CONTRA EL ACCESO A PARTES PELIGROSAS Y CONTRA LA PENETRACIÓN DE CUERPOS SÓLIDOS EXTRAÑOS INDICADOS POR LA PRIMERA CIFRA CARACTERÍSTICA		
5.1	Protección contra el acceso a partes peligrosas		NA
	Primera cifra característica:	---	NA
	Condiciones de ensayo según 12.2	---	NA
	Conformidad	---	NA
5.2	Protección contra cuerpos sólidos extraños		NA
	Primera cifra característica:	---	NA
	Condiciones de ensayo según capítulo 13	---	NA
	Conformidad	---	NA
6	GRADOS DE PROTECCIÓN CONTRA LA PENETRACIÓN DE AGUA INDICADOS POR UNA SEGUNDA CIFRA CARACTERÍSTICA		
	Segunda Cifra característica:	IPX4	P
	Condiciones de ensayo según 14.2.1 a 14.2.8	---	P
	Conformidad	IPX4	P
7	GRADOS DE PROTECCIÓN CONTRA EL ACCESO A PARTES PELIGROSAS INDICADAS POR LA LETRA ADICIONAL		
	Letra adicional	---	NA
	Condiciones de ensayo según 15.2	---	NA
	Conformidad	---	NA
8	LETRAS SUPLEMENTARIAS		
	Letra adicional suplementaria:	---	NA
	Condiciones de ensayo según 15.2	---	NA
	Conformidad	---	NA
9	DESIGNACIONES IP		
10	MARCAS		
	Especificadas en la norma particular del producto	---	NA

Apartado	Requisito – Ensayo	Resultado - Nota	Veredicto
	La norma especifica el método de marcado que debe utilizarse cuando:	---	NA
	- una parte de la envolvente tenga un grado de protección diferente del que tiene otra parte de esta misma envolvente	---	NA
	- la posición de montaje tenga una influencia sobre el grado de protección	---	NA
	- la profundidad y duración máximas de inmersión prolongada	---	NA
11	PRESCRIPCIONES GENERALES DE ENSAYO		
11.1	Condiciones atmosféricas para los ensayos en agua o polvo	---	P
	- temperatura	24,6 ºC	P
	- humedad relativa	59 %	P
	- presión del aire	1013 mbar	P
11.2	Muestra a ensayar	---	P
	- número de muestras ensayadas	1	P
	- condiciones de montaje, instalación y posición de las muestras	Según instalación	P
	- preacondicionamiento	---	NA
	- ensayado con o sin tensión	---	NA
	- ensayado con las partes móviles en movimiento o no	---	NA
	En ausencia de tales especificaciones, se aplican las instrucciones del fabricante	---	P
11.3	Aplicación de las prescripciones e interpretación de los resultados de ensayo	---	P
	- responsabilidad del Comité Técnico correspondiente		NA
	- en ausencia de tales especificaciones, se aplica la prescripción de esta norma	---	P
11.4	Combinación de las condiciones de ensayo para la primera cifra característica	---	NA
	Primera cifra característica:	---	NA
11.5	Envolventes vacías:		NA

Apartado	Requisito – Ensayo	Resultado - Nota	Veredicto
	Las instrucciones del fabricante deben dan detalle de las exigencias que conciernen a la disposición y a las distancias a respetar para las partes peligrosas o partes que puedan quedar afectadas por la penetración de objetos sólidos ajenos o agua	---	NA
	El fabricante del equipo asegura que la envolvente satisface el grado de protección declarado del producto final, una vez montado el equipo eléctrico	---	NA
12	ENSAYOS PARA LA PROTECCIÓN CONTRA EL ACCESO A LAS PARTES PELIGROSAS INDICADA POR LA PRIMERA CIFRA CARACTERÍSTICA		
12.1	Se utilizan las sondas de accesibilidad de la tabla 6	---	NA
12.2	Condiciones de ensayo según se especifica	---	NA
12.3	Condiciones de aceptación	---	NA
	Distancia suficiente entre la sonda de acceso y las partes peligrosas	---	NA
12.3.1	Para equipos de baja tensión	---	NA
	La sonda de ensayo no toca partes activas peligrosas	---	NA
12.3.2	Para equipos de alta tensión	---	NA
	El equipo soporta el ensayo de rigidez dieléctrica especificado en la norma particular	---	NA
	Si la envolvente contiene elementos a diferentes niveles de tensión, se aplica a cada elemento las condiciones de aceptación de las distancias suficientes	---	NA
12.3.3	Para equipos con partes mecánicas peligrosas	---	NA
	La sonda de ensayo no toca partes mecánicas peligrosas	---	NA
13	ENSAYOS PARA LA PROTECCIÓN CONTRA LA PENETRACIÓN DE OBJETOS SÓLIDOS AJENOS INDICADA POR LA PRIMERA CIFRA CARACTERÍSTICA		
13.1	Se utilizan los medios y condiciones de ensayo especificados en la tabla 7	---	NA
13.2	Condiciones de ensayo para las primeras cifras características 1,2,3,4	---	NA

Apartado	Requisito – Ensayo	Resultado - Nota	Veredicto
	La sonda de ensayo se apoya contra toda abertura de la envolvente con la fuerza especificada en la tabla 7	---	NA
13.3	Condiciones de aceptación para las primeras cifras características 1,2,3, 4	---	NA
	La protección es satisfactoria si no entra todo el diámetro de la sonda por cualquier abertura	---	NA
13.4	Ensayo de polvo para las primeras cifras características 5 y 6	---	NA
	El ensayo se lleva a cabo según se especifica, de acuerdo con la clasificación de categoría 1 o 2	---	NA
	Si no es posible ensayar la envolvente completa, se utiliza uno de los procedimientos siguientes:	---	NA
	- ensayo de las partes de la envolvente individualmente cerradas	---	NA
	- ensayo de las partes representativas de la envolvente que comporten elementos, tales como puertas, orificios de ventilación, juntas, palieres, etc, en su posición durante el ensayo	---	NA
	- ensayo de una envolvente más pequeña que comporte los mismos detalles de diseño que a su escala normal	---	NA
13.5	Condiciones especiales para la primera cifra característica 5	---	NA
13.5.1	Condiciones de ensayo según se especifica	---	NA
13.5.2	Condiciones de aceptación	---	NA
	La protección es satisfactoria si el examen muestra que el polvo de talco no se ha acumulado en cantidad o en un lugar tal que, para cualquier otro tipo de polvo, podrá afectar el funcionamiento correcto del equipo o la seguridad	---	NA
	El polvo no debe depositarse en zonas donde puedan producirse líneas de fuga	---	NA
13.6	Condiciones especiales para la primera cifra característica 6	---	NA
13.6.1	Condiciones de ensayo según se especifica	---	NA
13.6.2	Condiciones de aceptación	---	NA
	La protección es satisfactoria si no se observa deposición de polvo en el interior de la envolvente	---	NA

Apartado	Requisito – Ensayo	Resultado - Nota	Veredicto
14	ENSAYOS PARA LA PROTECCIÓN CONTRA LA PENETRACIÓN DEL AGUA INDICADA POR LA SEGUNDA CIFRA CARACTERÍSTICA		
14.1, 14.2	Medios y condiciones de ensayo según tabla 8	---	P
14.2.1	Ensayo para la segunda cifra característica 1 con la caja de gotas	---	NA
14.2.2	Ensayo para la segunda cifra característica 2 con la caja de goteo	---	NA
14.2.3	Ensayo para la segunda cifra característica 3 con el tubo oscilatorio o la cabeza de regadera	---	NA
14.2.4	Ensayo para la segunda cifra característica 4 con el tubo oscilante o la cabeza de regadera	Cabeza regadera	P
14.2.5	Ensayo para la segunda cifra característica 5 con boquilla de 6,3 mm	---	NA
14.2.6	Ensayo para la segunda cifra característica 6 con boquilla de 12,5 mm	---	NA
14.2.7	Ensayo para la segunda cifra característica 7, inmersión temporal entre 0,15 m y 1 m	---	NA
14.2.8	Ensayo para la segunda cifra característica 8: inmersión continua según acuerdo.	---	NA
14.3	Condiciones de aceptación	---	P
	Es responsabilidad del Comité Técnico relevante especificar la cantidad de agua aceptable en el interior de la envolvente, así como el precisar los ensayos de tensión dieléctrica, si ha lugar	---	P
	En general, la cantidad de agua introducida en la envolvente no deberá:	IPX4	P
	- ser suficiente para afectar el buen funcionamiento del equipo o alterar su seguridad	IPX4	P
	- depositarse en zonas que puedan afectar a las líneas de fuga	IPX4	P
	- alcanzar partes en tensión o arrollamientos no previstos para funcionar mojados	IPX4	P
	- acumularse en la proximidad de entradas de cables ni haber penetrado en los cables	IPX4	P
	Para envolventes con orificios de vaciado:	---	NA
	se verifica que el agua que haya entrado no se acumula y puede salir sin producir efectos perjudiciales	---	NA
	Si la envolvente no está provista de orificios de vaciado, la norma particular del equipo debe fijar las condiciones de aceptación para que la acumulación de agua no alcance las partes en tensión	---	NA

Apartado	Requisito – Ensayo	Resultado - Nota	Veredicto
15	ENSAYOS PARA LA PROTECCIÓN CONTRA EL ACCESO A LAS PARTES INDICADAS POR LA LETRA ADICIONAL		
15.1	Calibres de accesibilidad según tabla 6	---	NA
15.2	Condiciones de ensayo según se especifica	---	NA
15.3	Condiciones de aceptación	---	NA
	La protección es satisfactoria si se mantiene una distancia suficiente entre el calibre de accesibilidad y las partes peligrosas	---	NA